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# **Hill Air Force Base, Utah**

Ogden Air Logistics Center

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**Hill Air Force Base, Utah**

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**Final Environmental Assessment  
for the Propellant Testing & Analysis Complex**

**APRIL 2005**

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**FINAL ENVIRONMENTAL ASSESSMENT  
HILL AIR FORCE BASE  
PROPELLANT TESTING & ANALYSIS COMPLEX**

April 2005

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Prepared in accordance with the Department of Air Force Environmental Impact Analysis Process (EIAP) 32 CFR Part 989, Effective March 12, 2003, which implements the National Environmental Policy Act (NEPA), the President's Council on Environmental Quality (CEQ) regulations.

## **Finding of No Significant Impact for the Hill Air Force Base Propellant Testing & Analysis Complex**

Hill Air Force Base provides the only facility (Propellant Lab) in the U.S. Department of Defense that has the capability to dissect, machine, and test solid rocket motor propellant and other explosive items. In order to increase safety, and enable expansion and upgrading of the current capabilities of the Propellant Lab, Hill Air Force Base proposes to construct a new Propellant Testing & Analysis Complex (Complex), and to demolish the buildings at the existing Propellant Lab. This Environmental Assessment (EA) was prepared to analyze the environmental effects of the Proposed Action and the No Action Alternative.

The new Complex would include approximately 21,500 square feet (ft<sup>2</sup>) of building space, an underground storage tank (UST), and approximately 10,000 ft<sup>2</sup> of parking space. Electrochemical milling (ECM) facilities currently located at the Little Mountain Test Annex would be incorporated into the proposed Complex.

Siting requirements for the proposed Complex dictate that it be located:

- Within Hill AFB's established explosives cloud;
- In a location that fulfills the explosives site plan and explosive distances between buildings;
- Close to existing access roads; and
- Where there is little to no electromagnetic interference.

There is one location proposed for the Complex; it is on Maple Lane in the Missile Assembly, Maintenance and Storage (MAMS-2) area in the 2000 Area of Hill Air Force Base.

In addition to the attached EA for the Hill Air Force Base Propellant Testing & Analysis Complex, other environmental documents pertaining to this action include an Environmental Baseline Survey (EBS) prepared by Bowen Collins & Associates (BCA) in January 2004 for the Museum Site as part of the Space and Missile Facility Siting project, the Environmental Assessment (EA) for the Propellant Lab originally drafted in 2001, and the recently completed EA for the Hill Air Force Base Space and Missile Facility.

### **Summary of Environmental Impacts**

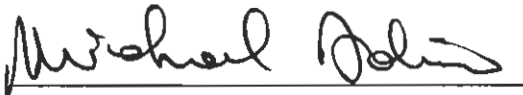
Resources that do not occur in the area, or would not be affected by the proposed project include: wetlands, wildlife, T&E, geology, prime and unique farmlands, and environmental justice. Resources that have been analyzed in the EA include: surface water, ground water, soil, vegetation, land use, cultural resources, air quality, noise, health and safety, transportation, socioeconomics, solid and hazardous wastes, and CERCLA/IRP (Comprehensive Environmental Response, Compensation, & Liability

Act)/(Installation Restoration Program) sites. As shown in the attached EA, the Maple Lane site fits the siting criteria for the Propellant Testing & Analysis Complex. The adverse impact of demolishing ten historic structures at the existing Propellant Lab, eligible for the National Register of Historic Places (NRHP), will be mitigated through a Memorandum of Agreement (MOA) between Hill AFB and the Utah State Historic Preservation Office (SHPO). A table comparing and summarizing impacts is included in the Executive Summary.

### **Conclusions Leading to FONSI**

Based upon the analyses conducted for this EA, no resources were identified that would be significantly impacted by the demolition of the current Propellant Lab buildings or construction of the Propellant Testing & Analysis Complex on Hill AFB, provided there is strict adherence to all applicable policies, procedures, and regulations, including the MOA for historic structures. Therefore, in accordance with 32 CFR Part 989, a Finding of No Significant Impact may be issued, and the preparation of an Environmental Impact Statement (EIS) is not necessary.

**Hill Air Force Base, Utah**



*Authorized Signature*

18 Apr 05

*Date*

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Appendix C - Historic Building Descriptions

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## List of Acronyms

ACCS	Accumulation Site
ACHP	Advisory Council on Historic Preservation
ACM	Asbestos containing materials
ADA	Americans with Disabilities Act
ADP	Area Development Plan
AFB	Air Force Base
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection and Health Program
AFPD	Air Force Policy Directives
ALC	Air Logistics Center
AMA	Air Materiel Area
AQCR	Air Quality Control Region
AT/FP	Anti-Terrorism/Force Protection
BACT	Best Available Control Technology
bgs	Below ground surface
BMP	Best Management Practice
CERCLA	Comprehensive Environmental Response, Compensation, & Liability Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DAQ	Department of Air Quality
dB	Decibel
DoD	Department of Defense
EA	Environmental Assessment
ECM	Electro-Chemical Milling
EIAP	Environmental Impact Analysis Process
EMD	Environmental Management Directorate
EOD	Explosive Ordnance Disposal
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ECZ	Explosives Clear Zone
FONSI	Finding of No Significant Impact
HAP	Hazardous Air Pollutant
IAP	Initial Accumulation Point
ICBM	Intercontinental Ballistic and Missile
IR	InfraRed
IRP	Installation Restoration Program
LH	Space and C31 Directorate
LM	ICBM Systems Program Office (SPO)
MAJCOM	Major Command
MAMS	Missile and Munitions Storage
MAMS-2	Missile Assembly, Maintenance and Storage
MAKT	ICBM Technical Branch



MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NCP	National Contingency Plan
NLR	Noise Level Reduction
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWP	Nationwide Permit
O <sub>3</sub>	Ozone
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PM <sub>10</sub>	Particulate Matter less than 10 Microns in Diameter
RCRA	Resource Conservation and Recovery Act
SAC	Strategic Air Command
SHPO	State Historic Preservation Office(r)
SMF	Space and Missile Facility
SO <sub>2</sub>	Sulfur Dioxide
SPO	Systems Program Office
SWMU	Solid Waste Management Unit
T&E	Threatened and Endangered
tpy	Tons Per Year
TTU	Thermal Treatment Unit
UACR	Utah Air Conservation Rules
UDAQ	Utah Division of Air Quality
USAF	United States Air Force
UST	Underground Storage Tank
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound

## Executive Summary

Hill Air Force Base (AFB) provides the only facility in the U.S. Department of Defense (DoD) that has the capability to dissect, machine, and test solid rocket motor propellant and other explosive items. Aging and surveillance testing of propellant samples is conducted in the Propellant Lab on Hill AFB, supported by the Little Mountain Test Annex, and the Lakeside facility (Oasis Compound). The Propellant Lab is comprised of 12 World War II vintage buildings that compromise the operational capabilities and safety of the facility due to their age, construction, and location. The margin of safety for the public visiting the increasingly popular Hill Aerospace Museum adjacent to the existing Propellant Lab is also an issue.

To increase safety, and enable expansion and upgrading of the current capabilities of the Propellant Lab, Hill AFB proposes to construct a new Propellant Testing & Analysis Complex (Complex), and to demolish the buildings at the existing Propellant Lab. The new Complex would include approximately 21,500 square feet (ft<sup>2</sup>) of building space, an underground storage tank (UST), and approximately 10,000 ft<sup>2</sup> of parking space. Electrochemical milling (ECM) facilities currently located at the Little Mountain Test Annex would be incorporated into the proposed Complex. To meet Hill AFB's Selection Criteria, the proposed Complex must be located:

- Within Hill AFB's established explosives cloud;
- In a location that fulfills the explosives site plan and explosive distances between buildings;
- Close to existing access roads; and
- Where there is little to no electromagnetic interference.

There is one location proposed for the Complex; it is situated on Maple Lane in the Missile Assembly, Maintenance and Storage (MAMS-2) area in the 2000 Area of the AFB. The Alternatives analyzed in this Environmental Assessment (EA) include the Proposed Action, described below, and No Action.

The Proposed Action consists of construction and operation of the proposed Propellant Testing & Analysis Complex in the MAMS-2 area of the 2000 Area, relocation of the ECM facilities from Little Mountain to Hill AFB, and demolition of the buildings at the current Propellant Lab location. The construction activities include running all utilities and other support, providing access and parking, and landscaping the grounds after construction has been completed. The demolition activities at the Propellant Lab would include removal of all buildings in the area under safety & regulatory constraints (known asbestos; potential lead), removal of the UST, soil testing and remediation at the site, EOD (Explosive Ordnance Disposal) clearance, removal/avoidance of subsurface utilities, and re-vegetation of the site once it is deemed clear of hazardous materials and contamination.

Under the No Action alternative, the proposed Propellant Testing & Analysis Complex would not be authorized at this time, and the buildings that comprise the current Propellant Lab would not be demolished. This would restrict the expansion and growth of the Propellant Lab. Current concerns regarding safety and congestion would continue.

A summary of impacts is provided in Table ES-1. It is anticipated that the construction and operation of the proposed Propellant Testing & Analysis Complex, incorporation of ECM facilities, and the demolition of buildings at the current Propellant Lab would have minor adverse environmental impacts. Beneficial impacts, however, to the Propellant Lab staff, Hill AFB, DoD, and the local community and traveling public would be anticipated from the construction and operation of the proposed Propellant Testing & Analysis Complex in its new location.

This EA has been updated by JBR Environmental Consultants, Inc. of Sandy, Utah. The Proposed Final EA for the Propellant Lab was originally prepared by URS Corporation of Salt Lake City, Utah in 2001. Due to changes in the scope of the project, Hill AFB requested that this EA be updated concurrently with the preparation of the Space and Missile Facility EA.

**Table ES-1. Anticipated Environmental Consequences from Demolition of Buildings at the Current Propellant Lab and the Construction and Operation of the Proposed Propellant Testing & Analysis Complex**

Environmental Issues	Proposed Action	No Action Alternative
Surface Water	Ponded water from demolition and construction activities would be expected to immediately infiltrate into the ground.	No impact.
Groundwater	No anticipated impact.	No anticipated impact.
Soils	During demolition and construction, efforts would be employed to prevent wind and water erosion.	No impact.
Vegetation	No significant adverse impact. Re-vegetation and landscaping would occur after demolition and construction.	No impact.
Air Quality	No measurable adverse impacts. During demolition and construction, efforts would be employed to prevent impacts to air quality. Negligible emissions from incidental chemical usage would occur.	No impact.
Cultural Resources	Adverse impacts to identified cultural resources would be addressed under the MOA. Appropriate mitigation efforts would be taken for inadvertent discoveries during construction activities.	The NRHP eligible historic buildings at the Propellant Lab would not be demolished under No Action.
Land Use	No anticipated adverse impact. EMR approval would be required prior to demolition activities at the current Propellant Lab. Land use of the Maple Lane Site would be improved.	No impact.
Noise	Short-term noise would occur during the demolition and construction activities but this noise would occur during daylight hours and would not affect the local population.	No impact.
Hazardous Materials/ Waste	All hazardous materials would be handled according to regulation during demolition of Propellant Lab. EM would be contacted prior to excavation of any contaminated soil. Hazardous cargo transport on I-15 between Hill AFB & Little Mountain for purposes of tactical motor dissection would be eliminated, saving 20 to 30 round trips per year.	Friable asbestos would be a consideration in lab activities. Hazardous cargo transport between Hill AFB and Little Mountain would remain at 20 to 30 round trips per year.
Health and Safety	During demolition, construction, and operation activities, all health and safety procedures and explosive safety requirements would be strictly followed. Beneficial impacts in the form of enhanced safety and health conditions for Lab personnel and the general public. Increased public safety with decrease in hazardous cargo hauled between Little Mountain and Hill AFB.	An anticipated adverse impact. Congested conditions would continue for personnel working at the propellant lab. Friable asbestos would be a consideration in lab activities. No change in transportation of hazardous cargo.
CERCLA/IRP Sites	Wastewater from the existing UST would be pumped out prior to UST removal. Process wastewater at the new facility would be collected in a new UST and transported as needed to the IWTP. If this wastewater were considered a hazardous waste, Hill AFB would comply with all RCRA hazardous waste transport requirements. The new UST would be equipped with appropriate leak detection devices.	No impacts.
Transportation	Local traffic could increase to the Maple Lane Site, but local routes are paved and well used. Hazardous cargo transport on I-15 between Hill AFB & Little Mountain for purposes of tactical motor dissection would be eliminated, saving 20 to 30 round trips per year.	No change.

Environmental Issues	Proposed Action	No Action Alternative
Socioeconomics	Beneficial impacts. The purchase of the demolition and construction labor, construction materials, and the employment of additional staff would be from the surrounding area, increasing local revenue. Increased efficiency of propellant analysis facilities.	Expansion and growth of the propellant facilities would be restricted.

## **1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION**

### **1.1 INTRODUCTION**

The Propellant Lab is located in the 1900 Area of the northwestern portion of Hill Air Force Base (AFB). The Propellant Lab is comprised of 12 buildings, most of which are World War II vintage, that house rocket propellant testing facilities in support of the Intercontinental Ballistic Missile (ICBM) Systems Program Office (SPO). Additional ICBM SPO support functions are conducted at the Little Mountain Test Annex, 25 miles northwest of Hill AFB. The ECM (electro-chemical milling) facilities are located at Little Mountain, which are used to chemically dissect tactical missile rocket motors and other propellants.

To increase safety and enable expansion and upgrading of current capabilities of the Propellant Lab, and to incorporate the ECM facility from Little Mountain into the Propellant Lab complex, Hill AFB proposes to construct a new Propellant Testing & Analysis Complex within the ECZ (explosives clear zone) at Hill AFB. Additionally, Hill AFB proposes to demolish the buildings at the current Propellant Lab location. The purpose of this Environmental Assessment (EA) is to evaluate the proposed construction of a new Propellant Testing & Analysis Complex, the proposed demolition activities at the current Propellant Lab, and the relocation of ECM to Hill AFB.

The Hill AFB General Plan Capital Improvements Program provides direction for future development at Hill AFB. The construction of a "propellant quality-control laboratory complex to replace inadequate facilities (a total of 12 buildings to be demolished) and accommodate future workload increases" is included under the strategy of 'right-sizing' (General Plan, 2002).

### **1.2 BACKGROUND**

Hill AFB is located in northern Utah about 25 miles north of Salt Lake City and approximately 5 miles south of Ogden (Figure 1). It was established by congressional order in 1935 and was constructed adjacent to the Ogden Army Arsenal beginning in 1940. In 1955, the Ogden Army Arsenal was transferred from the U.S. Army to the U. S. Air Force, doubling the size of the Base to a total of almost 6,700 acres and 1,171 buildings. The mission of Hill AFB centers on the maintenance and management of aircraft and missiles. Base industrial facilities include aircraft, vehicle, and missile management and support.

The Little Mountain Test Annex is located on 740 acres about 25 miles northwest of Hill AFB. Its function is to analyze and test missile survivability and vulnerability for the ICMB SPO. Dissected propellant from Little Mountain Test Annex is transported to the Propellant Lab at Hill AFB for further preparation and testing. Waste scrap from the propellant testing process is transported to the TTU (thermal treatment unit) at the Oasis Compound, approximately 100 miles west of Hill AFB.

Hill AFB houses the only facility in the Department of Defense (DoD) that has the capability to dissect, machine, and test solid rocket motor propellant and other explosive items. With the Propellant Lab and ECM facility, Hill AFB is able to complete aging surveillance of solid rocket propellant, conduct explosive component composition analysis, conduct explosive component and weapon system modifications, perform demilitarization and precious metal recovery, and handle incident investigation.

The Propellant Lab was developed in the mid 1960s for the developmental support of the Minuteman missile. The Propellant Lab currently provides full service support to both the ICBM Aging Surveillance Program, and the ICBM integrated product team. The Propellant Lab is comprised of 12 buildings in the 1900 Area of Hill AFB, which are used for explosive materials storage, hazardous materials/hazardous waste storage, non-hazardous materials storage, staff amenities, machine shop, and physical and chemical properties laboratories. The Propellant Lab analyzes propellant from such missiles as the Minuteman, Peacekeeper, Maverick, and AIM7 rockets.

Prior to arriving at the Propellant Lab, some of the missiles for analysis are initially sent to the Lakeside Compound at Utah Test and Training Range-North (UTTR-North) for dissection. This dissection facility cuts the rocket motors into donut-shaped cross-sections that weigh approximately 10,000 pounds (lbs.). The cross-sections are cut into approximately 200-250 lb. sections that are transported to the Propellant Lab. This dissection facility will remain at the Lakeside Compound and will not be addressed in this EA. Other motors are dissected at the Little Mountain Test Annex, which includes ECM.

Hill AFB proposes to construct a new Propellant Testing & Analysis Complex that will include a propellant testing lab, high hazard dissection and propellant machining facilities, propellant storage, suspect propellant storage, inert storage, an underground storage tank (UST), and a parking lot. There is one location (Maple Lane) being analyzed for the proposed complex (see Figure 2). It is within the Missile and Munitions Storage (MAMS-2) area in the 2000 Area of Hill AFB.

All of the current Propellant Lab buildings are scheduled for demolition (Bowen Collins & Associates 2004) in fiscal year (FY) 2006. Of these, ten are World War II (WWII) era and eligible to be listed on the NRHP. An UST is attached to building 1946 and would be removed as part of the demolition activities. Another action, construction of the proposed Space and Missile Facility (SMF), is under analysis for placement in one of four potential locations, one of which is the 1900 Area (JBR 2004). If this were the selected site for the SMF, the demolition would likely be re-scheduled for an earlier date, in conjunction with the relocation of propellant testing facilities

### 1.3 NEED FOR THE PROPOSED ACTION

The need for the proposed re-location of the Propellant Lab and incorporation of ECM from Little Mountain is based upon public and Hill AFB safety issues due to current facility location, age, congestion (design limitations), and operating/testing conditions and constraints. The incorporation of ECM places these associated functions in one general area of Hill AFB; siting in the 2000 Area of Hill AFB allows room for safe and functional design of the proposed complex. Demolition of structures and testing/removal of any contaminated soils and unexploded ordnances in the Propellant Lab area would clear the area for possible future excise/ development.

The current Propellant Lab operates under congested conditions. The age and construction of the buildings restricts the operational capabilities of the facility. Hallways are used as testing areas and office/storage space, as shown in photographs in Appendix A. Due to lack of space, test equipment is installed with minimal clearances for egress and operational safety. Future upgrading to new testing and computer analysis equipment would be difficult due to the lack of space. To accommodate the numerous upgrades and modifications that were necessary in the Propellant Lab facilities over the past 40 years, the electrical and plumbing systems have been extensively modified and their schematics are complicated, difficult, and in some locations, unknown.

The heating and cooling capabilities of the Propellant Lab are grossly inadequate and may, in the summer months, adversely affect ambient propellant tests. In the chemical properties laboratory, test equipment generates a large amount of heat. When the building cooling system occasionally fails, the temperature inside the building can go as high as 95°F in the summer months. Not only does the high temperature adversely affect the personnel working in the Propellant Lab, it also adversely affects samples undergoing ambient testing (testing at 70°F). The increase in temperature may create an early failure in the sample, producing erroneous test results and causing the test to be repeated.

The Propellant Lab is located in the northwestern area of Hill AFB. To the west and adjacent to the Propellant Lab is the Hill Aerospace Museum (museum). The museum is a local attraction with an average of 200,000 visitors annually (Hill Aerospace Museum website 2004). The museum is open seven days a week from 9:00 AM to 4:30 PM. Due to the immediate proximity of the museum, the testing of Class 1.1 Explosives (1.1) has been restricted to off-hours. The 1.1 classification refers to explosives that have a mass explosion hazard meaning that the entire load would be affected instantaneously (49 CFR 173.50). The Propellant Lab is prohibited from storing 1.1 propellant on site, so when 1.1 propellant requires testing, the propellant is stored in the (Missile and Munitions Storage) MAMS area. Moving the Propellant Lab further into the Explosives Clear Zone (ECZ) would enable the facility to conduct the testing of Class 1.1 Explosives (1.1) during regular hours as needed and would increase public safety in the museum area. The relocation of the Propellant Lab is referenced as a major initiative in the Explosives Clear Zone Master Plan (Montgomery Watson Harza 2003).



To the east of the Propellant Lab is the 729th Radar Support Squadron's radar transmitter tower. Due to the proximity of the tower and the fact that the Propellant Lab is in the direct line of the transmission tower, sensitive scientific equipment in the Propellant Lab has been affected. The logic board on the mill equipment has been rendered useless by the radiation and the radar waves have created spikes in the InfraRed (IR) spectroscopy readouts, altering test results. Location of the Propellant Testing & Analysis Complex in the 2000 Area would eliminate the electromagnetic interference.

#### **1.4 APPLICABLE REQUIREMENTS**

There are several regulatory environmental programs that apply to the Proposed Action. The significant program requirements are described below.

##### **1.4.1 Installation Restoration Program**

In 1986, Hill AFB undertook the investigative field work necessary for the Installation Restoration Program (IRP) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) efforts at the base. In 1991 Hill AFB, the Environmental Protection Agency (EPA), and the Utah Department of Environmental Quality signed a Federal Facility Agreement. The purpose of the agreement was to establish a framework and schedule for developing, implementing, and monitoring appropriate remedial actions at Hill AFB in accordance with the National Contingency Plan (NCP). As part of these efforts, eleven operable units (OUs) have been designated at Hill AFB. OU6 is the closest operable unit to the proposed Maple Lane site and partially underlies the existing Propellant Lab. OU9 includes the 1900 Area. (See Section 3.11).

##### **1.4.2 National Environmental Policy Act Requirements for Air Force Actions**

The National Environmental Policy Act (NEPA) of 1969 requires federal agencies to analyze the potential environmental impacts of a Proposed Action and to evaluate reasonable alternative actions. The results of the analyses are used to make decisions or recommendations on whether and how to proceed with those actions. Air Force Instruction (AFI) 32-7061, *Environmental Impact Analysis Process*, was revised 12 March 2003. At that time 32 CFR Part 989 was adopted as the controlling document on the Air Force Environmental Impact Analysis Process. This EA directs the completion of either a Finding of No Significant Impact (FONSI) or an Environmental Impact Statement (EIS). Both the 32 CFR Part 989 guidance and the implementing regulations of NEPA (40 *Code of Federal Regulations* [CFR] 1500) were followed in preparing this EA.

##### **1.4.3 Air Quality Requirements**

The Utah Air Quality Regulations (UAC R307) apply to the demolition activities that would occur at the current Propellant Lab and the construction activities proposed for the new Propellant Testing & Analysis Complex. The Proposed Action would occur in an area designated as a "maintenance" area for ozone. Therefore, the federal

conformity requirements at 40 CFR 93.153 require a conformity determination, unless it can be shown that the potential increased emissions are *de minimis* or that the action is specifically exempted. A conformity analysis was completed (Appendix B) and the expected increased emissions were shown to be *de minimis*.

The Utah Air Quality Rules (UAQR R307) apply to the activities that would occur during the Proposed Action. Emissions that have the potential to be regulated under UAC 307 include:

- 1) Demolition of the existing buildings,
- 2) Construction activities, both fugitive dust and equipment tail-pipe emissions,
- 3) Laboratory activities, such as solvents and bead blasting,
- 4) Laboratory's heating source, and
- 5) Employee vehicle traffic, both road dust and tail pipe emissions.

Air dispersion analysis would not be required because the annual emission estimates from demolition, construction, emission units, and vehicles are below modeling thresholds. Air dispersion modeling, in regard to CO Hotspot analysis, is not applicable because the proposed parking lot is less than 600 stalls, and thus is exempt activity.

UAC R307-800 applies to the demolition activity of all 1900 Area buildings. Asbestos inspection by a certified asbestos inspector is required prior to demolition. The Hill AFB Project Manager for Asbestos and Lead Based Paint indicated that asbestos containing materials (ACM) and lead-based paint have been identified in sufficient quantities in these buildings.

Activities that disturb more than one-half acre during demolition, construction, land clearing, or general construction located within Davis County are required to operate within site-specific "fugitive dust control plan." This plan must include measures to minimize fugitive dust generation (See UAQR 307-309). The plan will require documentation of fugitive dust control methods and acknowledge opacity limits. Fugitive dust from any source shall not exceed 15 percent opacity or 10 percent opacity at the property boundary.

#### **1.4.4 Cultural Resources Requirements**

Cultural resources are defined as any prehistoric or historic district, site, building, structure, place, or object considered important to a culture, subculture, or community for scientific, traditional, or religious reasons.

Cultural resources can be divided into three basic categories: archaeological, architectural, and traditional cultural properties. Archaeological resources are the manifestation of prehistoric and historic activities that measurably altered the earth (for example, pit houses, hearths), or physical remains that were deposited (for example, projectile points, pottery, cans, bottles). Architectural resources include standing buildings, dams, canals, bridges, or other structures. In general, architectural resources must be at least 50 years old to be considered eligible for inclusion in the NRHP. Structures less than 50 years old may warrant inclusion in the NRHP if they are

exceptionally significant or have the potential to gain future significance, such as Cold War era structures. Traditional resources are those associated with cultural practices and beliefs of a living community that are rooted in its history and are important in maintaining the continuing cultural identity of the community.

The National Historic Preservation Act, Section 106 (36 CFR 800) and Air Force Instruction 32-7065 require the Air Force to protect historic properties. Currently, there are no NRHP listed properties on Hill AFB. Over three hundred eligible and potentially eligible historic architectural resources have been identified within Hill AFB (Hill AFB Cultural Resources Preservation Office). The majority of these structures date to the late 1930s - early 1940s and also include Cold War properties. There are three proposed NRHP districts: the Ogden Arsenal/Ogden Air Materiel Area (AMA) Historic District, the Hill Field Historic Housing District, and the Strategic Air Command (SAC) Alert Historic District. Ten of the current propellant lab structures have been determined eligible for the NRHP and are considered contributing elements to the proposed Ogden Arsenal/Ogden AMA Historic District.

#### **1.4.5 Explosives Safety**

Air Force Manual (AFMAN) 91-201 – Explosives Safety Standards implements the specific guidance necessary to meet the objectives of Air Force Policy Directives (AFPD) 91-2 – Safety Programs and DoD 6055.9-Std. – DoD Ammunition and Explosives Safety Standards. It established a central source for explosive safety criteria and provides detailed requirements for transporting explosives and for operating vehicles and materials handling equipment in explosives locations.

#### **1.4.6 Hazardous Materials Management**

Hazardous materials management at Hill AFB is established by AFI-32-7086, Hazardous Materials Management. This AFI incorporates the requirements of all Federal regulations, Department of Defense Directives, and other AFIs for the reduction of hazardous materials uses and purchases.

Hazardous materials used on Hill AFB are managed through the Ogden ALC Center Hazardous Material Cell and the Hazardous Material Dispensing Facility which provide centralized management of the procurement, handling, storage, and issuing of hazardous materials. A review and approval process is utilized by Air Force personnel to ensure that users are aware of exposure and safety risks. Base management plans in conjunction with the Hazardous Waste Management Plan assist compliance with applicable Federal, state, and local regulations.

### **1.5 SCOPE AND ORGANIZATION OF THIS DOCUMENT**

The remainder of this document is organized as follows:

**Section 2** provides a description of the actions being proposed, including the No Action alternative;

**Section 3** describes the existing environmental conditions at Hill AFB;

**Section 4** identifies the potential environmental consequences associated with implementation of the Proposed Action and No Action;

**Section 5** presents a list of the preparers of this report;

**Section 6** contains a list of offices, agencies, and persons contacted for information used in the report; and

**Section 7** includes a list of references.

## **2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES**

This section describes the Proposed Action of construction of a new Propellant Testing & Analysis Complex, including ECM, re-location of the ECM facilities from Little Mountain to Hill AFB, and demolition of buildings at the current Propellant Lab facility. The selection criteria for locating the new Complex at Hill AFB are listed in Section 2.1.

### **2.1 PROPELLANT TESTING & ANALYSIS COMPLEX SITE SELECTION CRITERIA**

The criteria listed below were used to identify potential locations for construction of the proposed Propellant Testing & Analysis Complex. To be considered acceptable, the location must:

- Not interfere with the mission of Hill AFB, nor adversely affect DoD facilities or operations;
- Be in a location that has adequate space for the approximate 21,500 ft<sup>2</sup> building space and the approximate 10,000 ft<sup>2</sup> parking lot, all on a single level;
- Be located in Hill AFB's established explosive cloud (the perimeter of the sum of all explosive clear zone arcs of each facility that houses explosives in an area);
- Be in a location that has little to no electromagnetic interference;
- Allow for enough space to fulfill the explosives site plan and the explosive distance requirements between buildings; and
- Be close to existing access roads.

### **2.2 DESCRIPTION OF PROPOSED ACTION AND NO ACTION ALTERNATIVES**

Section 2.2.1 describes the elements included in the Proposed Action, and the proposed facilities included in the new Propellant Testing & Analysis Complex at Hill AFB. Section 2.2.2 discusses the No Action alternative.

#### **2.2.1 Proposed Action**

The Proposed Action includes the following:

- Construction of an approximate 21,500 ft<sup>2</sup> complex comprised of testing, storage, analysis, and administrative buildings
- Construction of approximately 10,000 ft<sup>2</sup> associated parking areas;
- Construction of utilities and other support;
- Relocation of ECM from Little Mountain to Hill AFB;
- Landscaping Complex grounds after construction is completed; and
- Demolition of buildings at the current Propellant Lab.

#### **Proposed Propellant Testing & Analysis Complex**

The proposed Propellant Testing & Analysis Complex would include a high hazard machine shop/ ECM; chemical/physical machine shop; consolidated propellant lab and

machine shop; munitions storage magazine; inert storage shed; ICBM propellant lab administrative facility, and USTs. The building foundations and floor slabs would be constructed from reinforced concrete and the walls and the roof would be frangible material. Blast walls and doors would be installed in the appropriate locations. Figure 4 shows a preliminary site plan for the proposed new facility.

The proposed Propellant Testing & Analysis Complex would be required to follow the same quantity-distance rules and other safety regulations that currently apply at Little Mountain.

The northwest corner of the intersection of Maple Lane and New Hampshire Drive in the MAMS-2 area is the proposed location for the new Complex. This location is within a fenced, gated, and guarded area that maintains Level 2 security. It is currently an empty field with the nearest buildings being used for hydrazine storage, cartridge actuated device overhaul, and overhaul of the F-16 emergency unit. This location meets the site selection criteria listed in Section 2.1.

The excavation depth of the new Propellant Testing & Analysis Complex is not expected to exceed 15 feet bgs. The operation of the Proposed Action would include the installation and use of an approximately 5,000 gallon double lined UST, with leak detection devices to collect all process wastewater.

The heat source for the new facility would likely be from the on-site steam plant, natural gas-fired boiler, or several natural gas-fired furnaces. These emissions are excluded from permitting because they will be used for "comfort heat". Other combustion emissions that may be associated with laboratory activities are likely excluded from permitting, based on R307-415e(1)(n).

The new Propellant Testing & Analysis Complex would initially operate with the same processes that are used at the current facility, with the incorporation of ECM. Motors to be dissected and tested would be transferred to the Complex from other locations on base.

The processes currently utilized include the following:

- Prior to testing, aluminum metal end caps are glued to propellant samples to provide a surface for the testing equipment to hold.
- After testing, the propellant and adhesive are removed from the end caps to enable end cap re-use. The propellant is cut from the end caps and the end caps are pre-soaked in acetone removing the majority of the adhesive.
- An aluminum and crushed glass media bead-blast operation is used to remove the remaining adhesive from the end caps. The non-hazardous emissions from the bead-blast process are vented internally through a HEPA filter and the filters changed approximately every three months
- The adhesive/solvent waste is packaged and disposed of as explosive scrap.
- Scrap propellant and propellant contaminated articles – rags, gloves, etc. – are disposed of by hauling them to the Oasis Compound for disposal in the

TTU (thermal treatment unit) .

During machining of the test samples, dust and small propellant fragments are produced from the cutting and milling of the propellant. The majority of the small propellant debris is swept up and disposed of, and the remaining dust and smaller particles are hosed down with water into a catch basin that drains into a UST. This wastewater is considered non-hazardous when compared against the Resource Conservation and Recovery Act (RCRA) Hazardous Waste criteria. The wastewater is currently pumped approximately three to four times a year into the Base's Industrial Wastewater Treatment Plant (IWTP). The new Complex would continue to discharge wastewater collected in the UST to the IWTP.

Hazardous wastes generated by these processes include: solvent waste from the chemical analysis and physical property testing (less than 55 gallons of waste solvent is expected to accumulate per year); waste oil and antifreeze generated during regularly scheduled maintenance on the propellant lab machinery; and battery waste products (potassium hydroxide) from the precious metal recovery performed on batteries removed from demilitarized Minuteman rocket motors. The waste solvent, waste oil and antifreeze, and the battery waste products would all be disposed of according to the Hill AFB Hazardous Waste Management Plan.

Process wastewater from the majority of the proposed operations would be collected in a new UST that would be periodically pumped out. The wastewater would be transported to the IWTP and treated in accordance with the Clean Water Act requirements. Wastewater from the UST may be required to be transported to the IWTP as a RCRA waste. If the wastewater is deemed a hazardous waste during transport, then Hill AFB will comply with all RCRA hazardous waste transport regulations. In addition, wastewater comprised of brine solution from the ECM activities would be collected in containment tanks and periodically disposed of.

Explosive propellant waste from milling and testing would be collected and transported to the Oasis Compound for disposal in the TTU (thermal treatment unit). Approximately 600-800 pounds of waste propellant is currently generated at the propellant lab each month. The new facility would be expected to produce similar quantities of propellant waste.

#### **Demolition of 1900 Area Buildings – Existing Propellant Lab**

The demolition of buildings at the current Propellant Lab includes the removal of all the current structures, and the removal of the UST. Wastewater located in the existing UST at the time of demolition would be pumped out and removed from the UST prior to the USTs removal at transported to the IWTP. Demolition activities for the buildings are scheduled for FY 2006, as shown below in Table 2-1. Ten of the current propellant lab structures have been determined eligible for listing on the NRHP and are considered contributing elements to the Ogden Arsenal/Ogden AMA Historic District. Demolition of these buildings would be coordinated through the Hill AFB Cultural Resources Program Manager and Civil Engineering.

**Table 2-1. Status of Current Propellant Lab Buildings**

Building Number	Building Purpose	On Demolition List	Historic Building
1932	Non Hazardous Storage	Yes	Yes
1940 A&B	Explosive Storage Igloo	No	No
1941	Chemical Testing Laboratory	Yes	Yes
1943	Physical Testing Laboratory	Yes	Yes
1944	Supervisor Office	Yes	Yes
1945	Hazardous Storage	Yes	Yes
1946	Machine Shop	Yes	Yes
1947	Non Hazardous Storage	Yes	No
1948	Breakroom, Showers and Lockers	Yes	Yes
1949	Non Hazardous Storage	Yes	Yes
1950	Hazardous Waste Packaging	Yes	Yes
1952	Hazardous Waste Storage	Yes	Yes

The demolition procedures for these buildings would include sampling for asbestos and lead-based paint, and notification to the UDAQ that buildings with asbestos would be demolished. Prior to the demolition of the buildings, a qualified contractor would remove the lead-based paint and the asbestos. Subsequent to the demolition of the buildings, soil samples would be collected to screen for contamination. If the soil were impacted then remedial actions would be taken. After remediation is complete and the soil is deemed acceptable, the surface soils would be aesthetically re-vegetated with native and other species adapted to a xeric environment, or the surface would be prepared for development.


### **Relocation of ECM from Little Mountain to Hill AFB**

The facility space required for the ECM operation is included in the design for the new Propellant Testing & Analysis Complex. The ECM facility at Little Mountain is a chemical dissect facility. Motors are currently transported from Hill AFB and dissected over the course of two to four weeks. The dissected propellant is then transported back to the propellant machine shop at Hill AFB for specimen preparation. Once the specimens are prepared, they are delivered either to the chemical analysis lab or the physical properties lab for testing. The entire ECM process would be moved from Little Mountain to Hill AFB; it includes containment tanks, rectifier, control console, guillotine, etc. Abandoned structures at Little Mountain would remain empty or be utilized for another industrial purpose. Three positions assigned to MAKI (ICBM Technical Branch) supporting the ECM process at Little Mountain are officially stationed at Hill AFB. These employees would work at Hill AFB in the new Complex. Traffic normally associated with hauling of motors to Little Mountain, and dissected propellant from Little Mountain to Hill AFB would be completely eliminated since these items would instead be transferred internally on base.

### **2.2.2 No Action Alternative**

Under the No Action alternative, the proposed new Propellant Testing & Analysis Complex would not be constructed and buildings at the current propellant lab facility would not be demolished. This would restrict the expansion of the propellant lab due to





the inability to install new test and computer analysis equipment from current space constraints. The inability to expand and upgrade the facilities would result in impairment to the reliability of aging data for solid rocket motors. In addition, the No Action alternative maintains the current crowded and poor working conditions that result in numerous safety concerns. Concerns would remain for the existing Lab regarding the inefficiency of propellant sample analysis efforts due to radar interference, and facility/equipment overheating due to down times for cooling systems. The ECM facility at Little Mountain would remain in its current location. Hazardous cargo transport to/from Little Mountain, and from Hill AFB to the Oasis Compound, would continue.

### 3.0 DESCRIPTION OF THE EXISTING ENVIRONMENT

This section describes the general environment at Hill AFB for the current Propellant Lab and the proposed Maple Lane site for the new Propellant Testing & Analysis Complex. The following sections characterize the physical conditions, natural and historic resources, environmental quality, land use, health and safety, transportation and socioeconomics at Hill AFB for the current Propellant Lab site and the proposed Maple Lane site.

#### **Resources Eliminated from Further Study**

The following resources would not be affected by the proposed project and are not carried forward for analysis:

**Wetlands:** There are numerous man-made and natural wetlands within Hill AFB. However, there are no wetlands in the vicinity of the Maple Lane site or the Propellant Lab. Wetlands would not be affected by the proposed project.

**Wildlife:** Hill AFB is a disturbed area with limited areas of natural habitat. Wildlife habitat is limited at both the Maple Lane site and the Propellant Lab location. No critical wildlife habitats occur at either site.

**Threatened and Endangered Species:** There are no known threatened or endangered (T&E) species inhabiting Hill AFB (General Plan 2002). There is no critical or important habitat present. T&E species would not be affected by the proposed project.

**Geology:** Hill AFB is located on a delta created by the flow of the Weber River into ancient Lake Bonneville. Hill AFB is located near one end of a triangular area that has experienced no major seismic activity in over 100 years and is considered relatively stable (General Plan 2002). Geologic features on base do not constrain development. Geology would not be affected by the proposed project.

**Prime and Unique Farmlands:** According to the Hill AFB General Plan and the Natural Resources Conservation Service (NRCS), the Timpanogos fine sandy loam is the only soil in the area considered to be prime farmland, when irrigated. The lands on Hill AFB of this soil type are not available for agricultural use. Prime and unique farmlands would not be affected by this project.

**Environmental Justice:** There is no expected change in the demographic profile of any minority group within the region. No minority or low-income population would carry undue burden of environmental risk as a result of the proposed project.

#### 3.1 SURFACE WATER

Hill AFB is located in the Weber River basin, west of the Weber River and east of the Great Salt Lake, in an area known as the East Shore. Located on an ancient delta

feature, topography at Hill AFB slopes generally westward. Precipitation averages approximately 20 inches per year.

Within the bounds of Hill AFB, there are no significant natural surface water features such as streams or lakes. Soils are quite sandy and typically well drained, and topography is gentle or moderate, so runoff is reduced due to substantial infiltration of precipitation.

Throughout Hill AFB, storm water runoff is controlled with a network of underground storm drains, open ditches, and retention ponds. The current propellant lab facility is served by the storm drain/pond network designated as Pond 11. The proposed Maple Lane site would also be served by Pond 11. In un-developed areas, surface runoff either infiltrates into the ground or is routed by drainage lines to retention ponds.

The nearest canal system to both sites is the Davis-Weber Canal, which is outside AFB boundaries, approximately 1/3 mile east of the current Propellant Lab, and 1/3 mile northeast of the Maple Lane site.

### **3.2 GROUNDWATER**

Hill AFB is located in the Weber Delta sub-district; of the three primary aquifers; two are the principal aquifers of the East Shore area. The Sunset and the Delta aquifers are deep, confined aquifers with depths below ground surface (bgs) of 250 to 400 feet and 500 to 700 feet, respectively. These aquifers are recharged through subsurface flow infiltrating fractures and joints in the Wasatch Range and from the under-flow of a deep unconfined aquifer near the mountain front. The third aquifer over lays the Sunset and the Delta aquifers, and is an unnamed, deep unconfined aquifer (Montgomery Watson, 1998). Groundwater in the vicinity of the Maple Lane site and the current Propellant Lab area would be expected to flow in a northeasterly, easterly direction due to the slope of the land to the north and east.

The depth to groundwater at the current Propellant Lab location is estimated at 100-110 feet bgs. The depth to groundwater at the Maple Lane site is approximately 40-45 feet bgs (Radian 1999a).

### **3.3 SOILS**

The soils along the East Shore were deposited during the Alpine and Provo stages of Lake Bonneville and have been grouped into the Alpine and Provo Formations, respectively. In the vicinity of Hill AFB, the Provo Formation (consisting of gravel and sand) is generally 10-30 feet thick. The Provo Formation overlies the Alpine Formation (gravel, sand, clay and silt with interbedded layers of fine sand and clay) which can be 101 to 135 feet thick (Montgomery Watson, 1998).

Surface soil in the Maple Lane area has been classified as Bingham Gravelly Sandy Loam. This soil is characterized as semi-permeable, fairly droughty and good for development purposes. Surface soil at the current Propellant Lab location is also Bingham Gravelly Sandy Loam in the southern portion of the facilities and Francis

Loamy Fine Sand in the northern portion of the facilities. Francis Loamy Fine Sand is a highly permeable soil, with a low water holding capacity and a high hazard for wind erosion if plant cover is removed.

### 3.4 VEGETATION

Hill AFB is located on a broad plateau between the Great Salt Lake on the west and the Wasatch Mountains on the east at approximately 4,850 feet elevation. The typical vegetation of the area is mountain brush, which in undisturbed areas may include plants such as scrub oak (*Quercus gambellii*), big sagebrush (*Artemisia tridentata*), rabbitbrush (*Chrysothamnus* sp.), and western wheatgrass (*Agropyron smithii*). Few undisturbed areas remain on the AFB. Disturbed and developed areas on Hill AFB may contain landscape shrubs/trees/lawn, seeded grasses, as well as introduced and weedy species – cheat grass (*Bromus tectorum*) and sunflowers (*Helianthus* sp.).

Hill AFB lands are generally managed according to categories of Unimproved, Semi-Improved, and Improved lands. Unimproved areas require little or no maintenance and occur only in the limited undeveloped areas of the AFB. Semi-improved sites are generally close to runways, roads, and test & training sites. These areas are periodically mowed as a vegetation, fire, and pest control measure. Improved lands are those developed for housing, recreation, and other building projects; these areas are expected to be landscaped and intensively maintained (General Plan 2002).

The Propellant Lab Site is currently occupied by several buildings, vegetated soil berms, and portions of open space. The area has been characterized as containing Developed and Semi-improved lands; however little landscaping exists in this area and minimal maintenance is needed. The vegetation consists of low shrubs and grasses, including rabbitbrush, gumweed (*Grindelia squarrosa*), *Astragalus* sp., and cheatgrass.

The Maple Lane site has been characterized as Unimproved ground. The Unimproved lands designation indicates that local vegetation inhabits the area such as rabbitbrush, snakeweed, sagebrush, and western wheatgrass, with introduced vegetation such as cheatgrass. The area requires limited to no maintenance.

### 3.5 AIR QUALITY

The majority of Hill AFB is located in Davis County, Utah. Davis County is designated by the EPA as a maintenance area for ozone (O<sub>3</sub>) and as an attainment area for all other National Ambient Air Quality Standards (NAAQS). The NAAQS include the criteria pollutants of nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), ozone (O<sub>3</sub>), particulate matter (PM-10) and lead (Pb). The northern portion of Hill AFB and the current Propellant Lab are located in Weber County. Weber County is in attainment status with the NAAQS, with the exception of Ogden City.

The Maple Lane Site is located near the border of Weber County and Davis County, but mainly in Davis County, Utah (See Figure 2). Hill AFB is located in the Wasatch Front Intrastate Air Quality Control Region (AQCR) 220.

The current activities located in building's 1933, 1940, 1941, 1943-1950, and 1952 are not listed in the Title V Permit and are likely excluded because of regulatory citation R307-415-5e(1)(n)-Insignificant Activities or emissions are deemed *de minimis*. Major source status has been assigned to Hill AFB, which received its' Part 70 (Title V) Permit on October 25, 2002. Hill AFB is major emitter of PM<sub>10</sub>, NO<sub>x</sub>, CO, VOCs, and HAPs. The estimated criteria pollutant emissions are approximately 628 tons per year (tpy). Hill AFB is subject to the following Federal regulations: 40 CFR 60 Subparts A, Dc, and Kb; 40 CFR 63 Subparts A, N, T and GG; and 40 CFR 82 Subparts B and F.

The Proposed Action would be within the boundaries of a major source and an air quality maintenance area. The heat source for the facility would likely be from the on-site steam plant, natural gas-fired boiler, or several natural gas-fired furnaces. Air dispersion modeling analysis would be required if the Proposed Action exceeds the following annual emission levels:

**Table 3.5-1 Air Dispersion Modeling Thresholds**

Pollutant	Emissions in tpy
VOC	25
CO	100
NO <sub>2</sub>	40
PM <sub>10</sub> , Non-fugitive emissions	15
PM <sub>10</sub> , Fugitive emissions	5
SO <sub>2</sub>	40
Offset (combined NO <sub>x</sub> , SO <sub>2</sub> , and PM <sub>10</sub> )	25

Hill AFB is located in a designated "maintenance" area for CO; any actions at Hill AFB must undergo review in accordance with the Federal Conformity Rule (40 CFR 93.153). For any maintenance areas designation, NO<sub>x</sub> and SO<sub>2</sub> cannot exceed 100 tpy. For ozone maintenance areas outside of ozone transportation zones, the sum of NO<sub>x</sub> and VOC cannot exceed 100 tpy. For CO maintenance areas, projects cannot result in 100 tpy increases. If qualified emission estimates from the Proposed Action are less than these values, the emissions are considered *de minimis* under 40 CFR 93.153.

### **3.6 CULTURAL RESOURCES**

#### Propellant Lab – 1900 Area

Ten of the current propellant lab structures (1932, 1941, 1943, 1944, 1945, 1946, and 1948, 1949, 1950, and 1952) have been determined eligible for the NRHP and are considered contributing elements to the proposed Ogden Arsenal/Ogden AMA Historic District. These ten structures were all constructed in the early 1940s during the Ogden Arsenal expansion period. World political tensions increased in the 1930s and made it imperative that the Ogden Arsenal and other such facilities be updated. The Ogden Arsenal, which had been constructed to store leftover and obsolete ammunition from World War I, grew dramatically as a result. As World War II approached, not only did the

storage facilities multiply more than tenfold, but the Arsenal also went into the business of manufacturing ammunition. The introduction of various types of ammunition manufactured at the installation necessitated the construction of many new buildings that took various forms as related to their function in the overall manufacture (and storage) process. These structures provide a unique picture of the U.S. Army build-up which occurred on the eve of and during World War II, providing particularly vivid images of the processes involved in the manufacture and storage of the munitions necessary to support the Pacific and European theaters of operation. During World War II, the Arsenal made significant contributions to the war effort. In addition to bomb and artillery shell loading, it served as an ammunition storage base for the Air Corps and was in charge of distributing all items of ordnance supply and equipment to all areas and stations in the western United States.

Individual building descriptions are provided in Appendix C.

Building surveys and assessments have been performed on Building 1932. Level II HABS/HAER documentation (HAER No. UT-84-AT) and a Utah State Historic Site Form were completed for Building 1932.

Building surveys and assessments have been performed on Buildings 1941 and 1943. Level II HABS/HAER documentation (HAER No. UT-84-BH) and a Utah State Historic Site Form were completed for Building 2142, identical in function and design to buildings 1941 and 1943.

Building surveys and assessments have been performed on Buildings 1944, 1945, 1949, 1950, and 1952. Level II HABS/HAER documentation (HAER No. UT-84-AW) and a Utah State Historic Site Form were completed for Building 2001, identical in function and design to buildings 1944, 1945, 1949, 1950, and 1952.

Building surveys and assessments have been performed on Building 1946. Level I HABS/HAER documentation (HAER No. UT-84-AU) and a Utah State Historic Site Form were completed for Building 1946.

Building surveys and assessments have been performed on Building 1948. Level III HABS/HAER documentation (HAER No. UT-84-AV) and a Utah State Historic Site Form were completed for Building 1948.

Isolated prehistoric artifacts have been recorded on Hill AFB, but no eligible archaeological sites have been documented.

No traditional cultural properties have been identified at Hill AFB.

No known historical or archaeological resources are present within the Maple Lane Site area.

### 3.7 LAND USE

Land use at Hill AFB is designated according to the predominant function of a given area. Land uses have varying levels of compatibility with each other; functional associations and/or environmental constraints are considered in the planning process for development on the AFB.

Additional principles that guide facility development on Hill AFB include: Right-Sizing, which balances infrastructure with mission and people; Force Protection, which provides guidelines for security measures designed to protect personnel, facilities, and equipment; the Facility Development Plan, which integrates these requirements with Facilities Board priorities and other considerations; Urban Design; Area Development Plans; Housing Community Plan; and Quality of Life (General Plan 2002).

Design and development of the Propellant Lab would occur in concert with the above-listed principles and guidelines for facility development on Hill AFB.

The 1900 Area, in which the Propellant Lab is located, is designated as Industrial. Land use to the northeast of this site is designated for Aircraft Operations; to the west is Community Commercial including the Hill Aerospace Museum. According to the General Plan Composite Utilities Map, electrical, sewer, and water lines are present within this site.

Facilities that house explosives at Hill AFB must be located within the designated explosive cloud. All explosive facilities have a radius that determines the area of potential impact of the explosives within the facilities (the explosive clear zone). The perimeter of all the building arcs is the explosive cloud. The current Propellant Lab and the proposed Maple Lane location are located within the existing explosive cloud. The Maple Lane Site is located in the MAMS-2 area. This area is currently utilized for explosive related activities, is located within the existing explosive cloud, and is consistent with the current land-use plan.

The General Plan (2002) loosely addresses the relocation of the Propellant Lab in the Observations and Recommendations Matrix where it states: "If the Explosive Clear Zones (ECZ) are decreased in the northern part of the base through new construction, relocation of munitions, and other efficiencies, this area could be a right-sizing candidate for land transfer or other development." The General Plan (2002) recommends that the 1900 Area be studied for redevelopment with possible outcomes to include land transfer and/or other Industrial land use. The Future Plans section lists "a propellant testing and analysis complex south of the 1900 Area that replaces ten WWII facilities."

The Explosives Clear Zone Master Plan (Montgomery Watson Harza 2003) initiatives include moving the Propellant Lab from the northeast portion of the base. By centralizing these types of facilities, HAFB would be able to decrease the ECZ cloud to permit greater flexibility of Base operations and facility sitings.

The ECM facility is currently located at Little Mountain Test Annex, 25 miles northwest of Hill AFB. Land use is limited to three categories: Industrial, Open Space, and Water. All of the developable land at Little Mountain is or should be Industrial (General Plan, 2002).

### **3.8 NOISE**

Noise at Hill AFB is created by aircraft, large transportation vehicular traffic, maintenance activities, logistical activities, supporting operations, and personnel vehicular transportation. Noise contours are modeled for aircraft operations (General Plan 2002) in order to site noise sensitive functions on the AFB. Maximum mission noise contours have been mapped for this purpose (NOISEMAP). According to the General Plan (2002), residential, commercial and recreational activities have varying sensitivities to noise levels, as such residential uses are not recommended in areas with noise levels above 65 decibels (dB), without noise level reduction (NLR).

The current Propellant Lab is located beyond the 65 dB noise contour. The Maple Lane site straddles the 65 dB noise contour.

### **3.9 SOLID AND HAZARDOUS MATERIALS/ WASTE**

The current Propellant Lab site is suspect for explosives due to the history of use and activities in the 1900 Area. The WWII era buildings in the 1900 Area have asbestos present in the thermal system insulation, floor tiles, and exterior transite and have the potential for lead-based paint. Friable and/or non-friable asbestos containing materials were identified in the roofing materials of these buildings. The asbestos is safe as long as the building materials containing the asbestos are not disturbed. No work should be done in the attic without first consulting Bioenvironmental Engineering for an evaluation.

Hazardous cargo (within motors) is currently hauled from Hill AFB to Little Mountain for dissection, and dissected pieces transported back to Hill AFB for testing. Hazardous propellant scrap from the testing process is transported from the Propellant Lab to the TTU at the Oasis Compound for proper disposal.

### **3.10 HEALTH AND SAFETY**

Health and safety on the AFB are regulated by the Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program (AFI-91-301), OSHA, and traffic safety requirements. The health of personnel at Hill AFB is supervised by Bioenvironmental Engineering Services. Bioenvironmental Engineering Surveys were conducted on Buildings 1941 (chemical testing lab), 1943 (physical testing lab), and 1946 (propellant machining) on 25 February 2000 for Buildings 1941 and 1943 and from 5-7 December 2000 for Building 1946. The surveys found minor deficiencies that have been rectified.

Due to the immediate proximity of the Propellant Lab to Hill Aerospace Museum, the testing of Class 1.1 Explosives (1.1) has been restricted to off-hours. The 1.1 classification refers to explosives that have a mass explosion hazard meaning that the



entire load would be affected instantaneously (49 CFR 173.50). The Propellant Lab is prohibited from storing 1.1 propellant on site, so when 1.1 propellant requires testing, the propellant is stored in the MAMS area. The MAMS areas are under Security Clear zones, controlled areas which encompass both MAMS-1 and MAMS-2.

All hazardous cargo transported on public roads and highways is done so according to state and federal regulations.

### **3.11 CERCLA/IRP SITES**

Under the IRP and CERCLA efforts at Hill AFB, a Federal Facility Agreement was signed which resulted in the designation of 11 OUs. The Propellant Lab is within the designated area of OU 6 under CERCLA and is included in the OU9 North Area.

OU6 contains two identified groundwater contamination plumes. The source areas for OU6 are presumed to be within the MAMS-2 area and have created an east and west ground water plume. The smaller west plume extends under the Propellant Lab. Depth to water at OU6 is about 40 feet bgs, however, surface soils may also be contaminated in this area. OU6 is primarily contaminated with trichloroethylene and dichloroethylene; the levels of contamination do not pose imminent health hazards. The selected remedial action on this site is natural attenuation. (BCA 2004a)

OU9 consists of Solid Waste Management Units (SWMUs) identified by the Utah Department of Environmental Quality that are not part of other OUs. Propellant Lab buildings 1948, 1950, and 1952 were identified as SWMUs needing additional inspection and sampling (Bowen Collins & Associates 2004).

The 1900 Area is located in an area classified as Category 7 (BCA 2004a); a designation signifying that it requires further investigation. Old ordnances are suspected to exist on the site. The WWII era buildings in the 1900 Area have asbestos present in the thermal system insulation, floor tiles, and exterior transite and have the potential for lead-based paint. Building 1946 has a wastewater basin that consists of a small earthen sump that receives industrial wastewater. This sump connects to a 3,000 gallon UST. This UST is a double lined tank that has leak detection devices. There have been no known spills from the UST to the groundwater. The wastewater is pumped out of the UST, transported to the IWTP and treated in accordance with the Clean Water Act requirements. OU6 includes an area of soil contamination approximately 100 feet south of the current Propellant Lab. Soil testing for hazardous waste characteristics is recommended to identify disposal requirements (BCA, 2004a). . The 1900 Area is currently under contract for soil testing and analysis to characterize levels of soil contamination, if any, in the Area.

The Maple Lane Site is situated to the south of the operable unit; since groundwater in this area flows in a northeasterly direction, the Maple Lane Site is not in the path of the groundwater plume (Figure 3).

### 3.12 TRANSPORTATION

In general, access to Hill AFB is by I-15 that runs north-south adjacent to the western boundary of the AFB. Highway 193 runs east-west along the south side of the southern boundary of the base. Highways 60 and I-84 parallel the eastern edge of the base. Highway 26 crosses I-15 to the north of the base. There are four gates at Hill AFB: South Gate, Southwest Gate, West Gate, and Roy Gate. Internal roadways on Hill AFB are well established and include arterial and collector routes.

The main arterials through the base are Wardleigh Road, 6<sup>th</sup> Street, 11<sup>th</sup> Street, 12<sup>th</sup> Street, and Southgate Drive. Wardleigh Road connects to 5600 S Street and I-15 at Roy Gate. M Avenue and Wardleigh Road connect to 1800 N Street and I-15 at the West Gate. Southgate Drive connects to Highway 193 at the South Gate; I-15 is accessible to the west and US Highway 89 to the east. The local and regional transportation networks adequately support Hill AFB (General Plan 2002).

The latest on-base traffic studies (General Plan 2002) indicate that about 43 percent of base traffic enters and exits through the South Gate. The West Gate carries 38 percent of the traffic volume. The Southwest Gate carries 11 percent and Roy Gate 7 percent of base traffic.

Most of the traffic volume, about 70 percent, enters the base between the hours of 0600-0700 and exits between 1530-1615. The south base area is the main destination area. The 1200 zone is also heavily trafficked. According to the traffic study (General Plan 2002), almost half of vehicles entering the West Gate proceed to the south base area. Most of the vehicles entering the base from the Roy Gate proceed to the 1200 zone. Vehicles entering either the South Gate or Southwest Gate mostly remain in the south base area.

In-bound traffic can back up at times, affecting surrounding communities, especially during periods of increased force protection measures. The South Gate traffic can back up to about one mile south on Hill Field Road and also extend east to Highway 89. West Gate traffic backs up on I-15. According to the General Plan (2002), the South Gate and West Gate are stressed during morning and evening peak hour work shift changes.

On-base traffic is distributed from the arterial roads to the collector roads, which include New Jersey Drive, Browning Avenue, M Avenue, E Avenue, and Foulis Road. Collector roads distribute traffic to the local roads and destinations.

Transportation modes on base also include air and rail transport.

The Roy Gate was recently relocated/reconfigured and a new roadway was constructed in order to address safety and security issues (URS 2003). The gate and roadway were designed to better support the amount of traffic received and to increase safety for pedestrians at the Hill Aerospace Museum.

The current Propellant Lab is located off North Drive, a local road. The Maple Lane site is on Maple Lane at New Hampshire Drive. It could be accessed from the Wardleigh Road arterial then utilizing collector roads. The nearest gate is the Roy Gate.

Tactical motors intended for dissection are transported from Hill AFB to Little Mountain. Dissected motors are transported from Little Mountain to Hill AFB for testing at the Propellant Lab. This 50-mile round trip via I-15 is required approximately 20 to 30 times per year. Hazardous propellant scrap from the propellant testing process is transported to the Oasis Compound west of the Great Salt Lake via I-15 and I-80. This 100-mile one-way trip occurs approximately 10 to 12 times per year.

### **3.13 SOCIOECONOMICS**

Hill Air Force Base straddles both Davis and Weber counties. Davis County lists the base as the county's largest employer (employs 10,000-14,999) while Weber County does not list the base in its top 36 employers (source: Utah Dept. of Workforce Services, September 2003). Currently there are 5,737 military personnel and 11,580 civilian employees at Hill AFB (General Plan 2002). In addition, 3,718 civilian contractors are employed on base.

Davis County had a population of 238,994 in 2000 (source: GOPB). It ranks 2<sup>nd</sup> in the state for population density and 29<sup>th</sup>, or last, in land area with 304 square miles, an average of 786 persons per square mile. In 2002, Davis County population had increased to 250,265 (source: Utah Population Estimates Committee). This represents an increase of 4.7%.

Weber County had a population of 196,533 in 2000 (source: GOPB). It ranks 3<sup>rd</sup> in population density for the state and 28<sup>th</sup> in land area with 576 square miles, an average of 341 persons per square mile. In 2002, Weber County population had increased to 203,277 (source: Utah Population Estimates Committee). This represents an increase of 3.4%.

Civilian federal defense employment dropped significantly between 1990 and 2000. According to the Department of Economic Analysis *State of Utah Employment by Detailed Industry* data (source: GOPB), civilian federal defense employment for the state was 21,220 in 1990 and dropped to 12,925 by the year 2000. In 2001, that employment number increased to 13,842 and was predicted to remain stable for the next 20 years or so.

Hill AFB had a 2003 payroll of \$748 million (Source: Salt Lake Tribune, 2004). The estimated annual impact on the Utah economy is \$2 billion. Hill AFB's total 2003 expenditures were \$901 million and annual contracts awarded totaled \$696 million. Hill Air Force Base is the single largest employer in the state of Utah (General Plan 2002).

The Hill AFB Propellant Lab has a current staff of 20. The MAKI at Little Mountain Test Annex has a current staff of three; Hill AFB is the official duty station for these three positions.

## **4.0 ENVIRONMENTAL CONSEQUENCES**

This section describes the effects that the Proposed Action and the No Action alternative would have on Hill AFB existing conditions. The effects or impacts of the alternatives can be beneficial or adverse, and short-term or long-term, as discussed below.

### **4.1 SURFACE WATER**

#### **4.1.1 Proposed Action**

Demolition activities of the current Propellant Lab and construction activities of the new Propellant Testing & Analysis Complex may affect local short-term surface water run-off patterns and create a small amount of ponding in the excavations. However, the ponded water is expected to infiltrate into the ground.

Construction-related storm water impacts would be temporary, and would be minimized by using standard Best Management Practices (BMPs). These BMPs would include such measures as minimizing disturbed areas, installing sediment control such as silt fences, and quickly revegetating disturbed areas after construction is completed.

Over the long term, a greater volume of storm water would be produced from the developed site due to more pavement and roofed areas. This would contribute more storm water runoff than the unpaved ground surface because infiltration would be reduced. This runoff could also pick up increased pollutant loads from vehicle motor oils, road salts, etc. All such runoff would be directed to the storm drain system, so impact would be minimal.

#### **4.1.2 No Action**

There are no current discharges to surface water from the operations of the Propellant Lab. The No Action alternative would result in no changes and no impacts to surface water.

### **4.2 GROUNDWATER**

#### **4.2.1 Proposed Action**

Demolition activities are not expected to impact groundwater at the current Propellant Lab location.

There are no expected releases to groundwater from the Propellant Testing and Analysis Complex operations. Therefore, no groundwater impacts are expected from the demolition activities at the current Propellant Lab and the construction and operation of the proposed Complex.

#### **4.2.2 No Action**

There would be no effects on the groundwater conditions under the No Action alternative. Therefore, there are no anticipated impacts to groundwater from the No Action alternative.

### **4.3 SOILS**

#### **4.3.1 Proposed Action**

The demolition of the current Propellant Lab and the construction and operation of the proposed Propellant Testing and Analysis Complex would impact surficial soils during the demolition and construction processes.

To reduce the potential effects of wind and water-erosion on exposed soils during demolition and construction the following efforts may be enacted:

- minimization of the disturbed area size;
- removal and protection of stockpiled soils; and
- replacement of stockpiled soils where possible.

With the implementation of these efforts, no major adverse impacts to soils are expected from the demolition activities at the current Propellant Lab and the construction and operation of the proposed Propellant Testing & Analysis Complex.

#### **4.3.2 No Action**

No impacts to soils would occur under the No Action alternative because the soils would not be disturbed under this alternative.

### **4.4 VEGETATION**

#### **4.4.1 Proposed Action**

Only small areas of vegetation located in and around the demolition site of the current Propellant Lab and the construction area for the new Propellant Testing and Analysis Complex would be affected from the demolition/construction activities. The overall area that would be affected by demolition activities would be approximately 5 acres – the majority of this area is currently occupied by structures; little vegetation would be affected.

The area that would be affected by construction at the Maple Lane Site is approximately 2 acres of which approximately 1.5 acres would be re-vegetated. The landscaping around the new Complex is expected to provide a visual and vegetative improvement to the area. The new grounds would be classified as "Improved" and would be intensively maintained.

#### **4.4.2 No Action**

Vegetation would not be disturbed or impacted under the No Action alternative.

## **4.5 AIR QUALITY**

### **4.5.1 Proposed Action**

Emissions from the buildings scheduled for demolition located at the current Propellant Lab and the emissions from construction of the proposed Propellant Testing & Analysis Complex were shown to be below the *de minimis* levels for VOCs and NOx specified in the Conformity Rule (see Appendix B). Based on these results, the Air Force is not required to perform a full conformity determination.

The air quality in the vicinity of the current Propellant Lab location and the Maple Lane Site would be impacted over the short-term from the demolition and construction. Heavy construction equipment will create short-term combustion and fugitive dust emissions. Because of the presence of ACM in the existing Propellant Lab buildings, a fugitive dust control plan may be required, even though the existing facility is located in Weber County. Because the Maple Lane Site is located in Davis County, the Proposed Action will require submittal of a fugitive dust control to Utah Division of Air Quality (UDAQ). These emissions would be addressed under the required fugitive dust control program (UAQR R307-309).

Demolition of the existing propellant laboratory would be subject to UAR 307-800 Asbestos and Lead-Based Paint (See Section 4.11).

The Proposed Action will be within the boundaries of a major source and an air quality maintenance area as designated under the NAAQS. The Proposed Action includes construction of a new parking area that would be less than 600 stalls. Based on the number of parking stalls, this is an exempt activity under UAQR. In addition, an emissions impact analysis (See UAQR 307-413-4 (5)) and permit modification will not be required.

### **4.5.2 No Action**

Under the No Action alternative, it is assumed the existing buildings would not be demolished. Thus, no fugitive dust control plan is required. Short-term impacts would not result, because there is no construction activity. With all other parameters remaining constant, there are no long-term impacts resulting from No Action.

## **4.6 CULTURAL RESOURCES**

### **4.6.1 Proposed Action**

- The Proposed Action would include the demolition of ten historic structures at the Propellant Lab. The ten structures have been determined eligible for the NRHP and are considered contributing elements to the proposed Ogden Arsenal/Ogden AMA Historic District. Demolition would constitute an Adverse Effect under 36 CFR 800, and therefore requires Hill AFB to enter into a Memorandum of Agreement (MOA) with the SHPO. This agreement identifies measures that would mitigate the adverse effect of destroying the buildings, and invites the ACHP to be a consulting party to the agreement.

The MOA, signed 29 March 2005, lists the stipulations that must be implemented prior to demolition in order to take into account the effect of the undertaking on historic properties. These stipulations include construction of an exhibit in the Hill Aerospace Museum consisting of wall mounted displays, and a free standing model depicting the history of the Ogden Arsenal. The exhibit will include an account of the associated buildings in the Ogden Arsenal and their specific functions supporting munitions production, storage and transfer during World War II. Photographs of representative types of buildings slated for demolition, conforming to HABS/HAERS standards are required as well as digital photographs and other information to be posted to the Hill AFB Cultural Resources Public Outreach Web Site. Provided these procedures are implemented prior to demolition, there will be no impact to historic resources at the current propellant lab location as a result of the proposed action.

Currently, there are no known cultural resources located at the Maple Lane Site. If any cultural resources are observed in the area during any phase of construction, action in the immediate vicinity would stop, and the Inadvertent Discovery Procedures would be implemented with direction from the Hill AFB Cultural Resources Manager and in accordance with the Hill AFB Integrated Cultural Resources Management Plan (2004).

Under the stipulations in the MOA, no significant adverse impacts to cultural resources would be expected from the Proposed Action.

#### **4.6.2 No Action**

Under the No Action Alternative, no demolition or construction activity would take place. The Propellant Lab would remain at the current location. There would be no impacts to cultural resources.

### **4.7 LAND USE**

#### **4.7.1 Proposed Action**

Although there would be no expected adverse impacts to land use from the Proposed Action, approval from EMR would be required prior to demolition activities at the current Propellant Lab location.

The area required to construct the Propellant Testing & Analysis Complex at the Maple Lane Site would not infringe upon the potential restricted area or the OU 6 area, as shown in Figure 3. Use of land at the Maple Lane Site would be improved by construction of the new Complex.

Demolition activities may impact existing utilities. All sanitary sewers, stormwater sewers, potable water lines, transportation systems, electrical, or natural gas lines (as appropriate) in the vicinity of or attached to the current Propellant Lab buildings would be capped and disconnected as determined and agreed upon by the CE and the demolition contractor.



#### **4.7.2 No Action**

Land use would remain the same under this alternative. The ECM would remain at the Little Mountain Test Annex. The Explosives Clear Zone Master Plan initiatives (Montgomery Watson Harza 2003) would not be achieved under the No Action alternative.

### **4.8 NOISE**

#### **4.8.1 Proposed Action**

The proposed demolition activities at the current Propellant Lab and the construction of a new Propellant Testing & Analysis Complex would create short-term minor noise impacts during daylight hours. Noise from demolition activities could impact visitors to the outdoor museum exhibits during daylight hours. These demolition activities would be short-term, not expected to exceed seven weeks.

#### **4.8.2 No Action**

No impact would occur to the current noise levels under the No Action alternative.

### **4.9 SOLID AND HAZARDOUS MATERIALS/ WASTE**

Demolition of the existing Propellant Lab facility buildings would involve hazardous materials and solid waste. This would be managed under AFI-32-7086 which incorporates the requirements of all Federal regulations, Department of Defense Directives, and other AFIs regarding hazardous materials and waste.

The Environmental Management Directorate would be notified for approval prior to any movement of soil. If contaminated soil were encountered, it would be disposed of in accordance with CERCLA standards and Hill AFB requirements. If any hazardous materials or hazardous wastes were encountered during demolition, the Hazardous Waste Management Plan would be followed for the handling, storing and disposal of all hazardous substances.

Other development at this site may require clearance by the EOD (Explosives Ordnance Disposal) function at Hill AFB. This process requires submittal of a clean-up plan to the Defense Safety Board, plan approval, and EOD site work to remove any explosives or ordnance.

### **4.10 HEALTH AND SAFETY**

#### **4.10.1 Proposed Action**

If all health and safety procedures are followed during the demolition process, there are not expected to be any adverse impacts to health and safety during the demolition of the current Propellant Lab.

Potential impacts to health and safety could arise during the construction of the proposed Propellant Testing & Analysis Complex. All Occupational Safety and Health

Administration (OSHA) requirements would be followed during construction work to minimize potential risk.

By-product hazardous waste from the proposed Propellant Testing & Analysis Complex operations would be disposed of in accordance with Hill AFB safety standards. All explosive safety distances and requirements would be fulfilled with the construction and operation of the Complex at the proposed location. Asbestos may be incorporated into the Maple Lane Site in a non-friable form as a fire retardant. Asbestos in this form is safe and would not impact the health or safety of the Propellant Lab personnel. Therefore, there are no adverse health and safety impacts expected from operation of the proposed Propellant Testing & Analysis Complex.

Under the Proposed Action, re-location of the Propellant Lab facilities from the current location to the proposed location removes the potential for an accidental scenario that could involve the adjacent Hill Aerospace Museum.

Transportation of hazardous cargo between Little Mountain and Hill AFB for the purposes of tactical motor dissection would be eliminated, saving 20 to 30 round trips per year. This transport reduction serves to reduce the risk of highway accidents involving the public and hazardous materials on those sections of I-15.

Transportation of hazardous scrap from Hill AFB to the Oasis Compound would continue at the current rate of 10 to 12 100-mile trips per year.

#### **4.10.2 No Action**

In the current Propellant Lab, friable asbestos has been identified in the floor tiles and in the roof. The asbestos is safe as long as the building materials containing the asbestos do not expose the friable asbestos, allowing the circulation of asbestos dust. The health and safety ramifications of disturbing the current friable asbestos materials therefore restrict the activities of the Propellant Lab.

Under the No Action alternative, personnel working at the current Propellant Lab would continue to work under congested conditions in older buildings. Health and safety of personnel at the Propellant Lab may be adversely impacted by the No Action alternative.

In addition, under the No Action alternative, the Propellant Lab would continue to be adjacent to Hill Aerospace Museum. This is a potential safety hazard for the museum in the case of an incident at the Propellant Lab.

#### **4.11 CERCLA/IRP SITES**

##### **4.11.1 Proposed Action**

There is no expected contact or impacts from the OU 6 west plume groundwater at the current location. The demolition activities at the current Propellant Lab location would not be expected to encounter the OU-impacted soils under the Propellant Lab, and

therefore would not be expected to impact surface waters. The Proposed Action would require the concurrence of the EMR prior to proceeding with the demolition.

Any leakage from the UST near Building 1946 or the surrounding drain system, currently unknown, that may be discovered in the course of demolition would need to be reported and appropriately remediated.

The Maple Lane Site is not expected to be impacted by the contaminated groundwater from OU 6 and the remedial activities at OU 6 are not expected to be impacted by the construction of the new Complex.

#### **4.11.2 No Action**

Under the No-action Alternative, the Propellant Lab would remain in the west plume OU 6 area. Ongoing monitoring and remediation would be required.

### **4.12 TRANSPORTATION**

#### **4.12.1 Proposed Action**

Short-term traffic delays during demolition activities would be unlikely, as the existing Propellant Lab is located off North Drive, a local road with little traffic that serves the 1900 Area.

Short-term traffic delays during the construction activities of the Proposed Action could occur. Congestion on other base roads could occur during construction as drivers try to avoid the construction area. The delays and construction-related congestion would be expected to be minimal and of short duration.

After construction, there would be an increase in traffic to the new Propellant Testing & Analysis Complex location. The current facility employs 20 staff and the ECM MAKTP employs three staff; this would not represent a great increase in traffic in the Proposed Action area. There would be the possibility of up to 12 additional staff being employed at the new location. Again, this small increase in traffic would not adversely impact the transportation routes. With a military and civilian workforce of over 15,000, the 35 possible staff at the proposed Propellant Testing & Analysis Complex would represent less than 0.25 percent of the base traffic.

As noted above in section 4.10, transportation of hazardous cargo from Little Mountain to Hill AFB would be reduced, which also reduces the risk of highway accidents involving the public and hazardous materials on those sections of I-15.

Transportation of hazardous cargo between Little Mountain and Hill AFB for the purposes of tactical motor dissection would be eliminated, saving 20 to 30 50-mile round trips per year. This transport reduction serves to reduce the risk of highway accidents involving the public and hazardous materials on those sections of I-15.

#### **4.12.2 No Action**

Under this alternative, the existing propellant facility would continue to operate and the MAKTP that support the ECM would remain at Little Mountain. There would be no impacts to transportation.

### **4.13 SOCIOECONOMIC CONDITIONS**

#### **4.13.1 Proposed Action**

The three staff assigned to MAKTP that support the ECM process at Little Mountain are already officially stationed at Hill AFB. Therefore, there will be no increase in employees at the AFB due to relocating ECM from Little Mountain to Hill AFB.

The expansion of the Propellant Lab facilities is expected to increase the workload, possibly requiring additional staff. Additional staff, up to 12, may be employed at the new facility, depending on workload. This would be an increase of over 50 percent of current staff (20). These workers, to be employed in the machine shop and laboratory, would likely be from the surrounding communities; therefore, there would not be an influx of people to either of the densely populated counties (Davis and Weber) as a result of the Proposed Action. There would be no expected change in the demographic profile within the region. There would be a slight increase in payroll, depending on workload, resulting from the relocation of the Propellant Lab.

Local equipment suppliers and a local worker base would be utilized for demolition and construction. This would generate local revenue, a short-term benefit.

#### **4.13.2 No Action**

Under the No Action alternative, the Propellant Lab would remain in space-constrained facilities that inhibit expansion and growth.

### **4.14 CUMULATIVE IMPACTS**

There are no significant long-term cumulative impacts expected from the demolition activities at the current Propellant Lab facilities and the construction and operation of the proposed Propellant Testing & Analysis Complex. Although the demolition of the ten historic buildings at the Propellant Lab would decrease the number of historic buildings at Hill AFB, stipulations outlined in the MOA would mitigate this adverse affect. Construction of the proposed Propellant Testing & Analysis Complex at the Maple Lane Site would remove the potential impacts of the current Propellant Lab being adjacent to the public museum. Current congested working conditions at the Propellant Lab would be alleviated. Negligible air emissions from chemicals used in the analysis and testing process would continue and would be expected to contribute a very small percentage of the total air emissions at Hill AFB.

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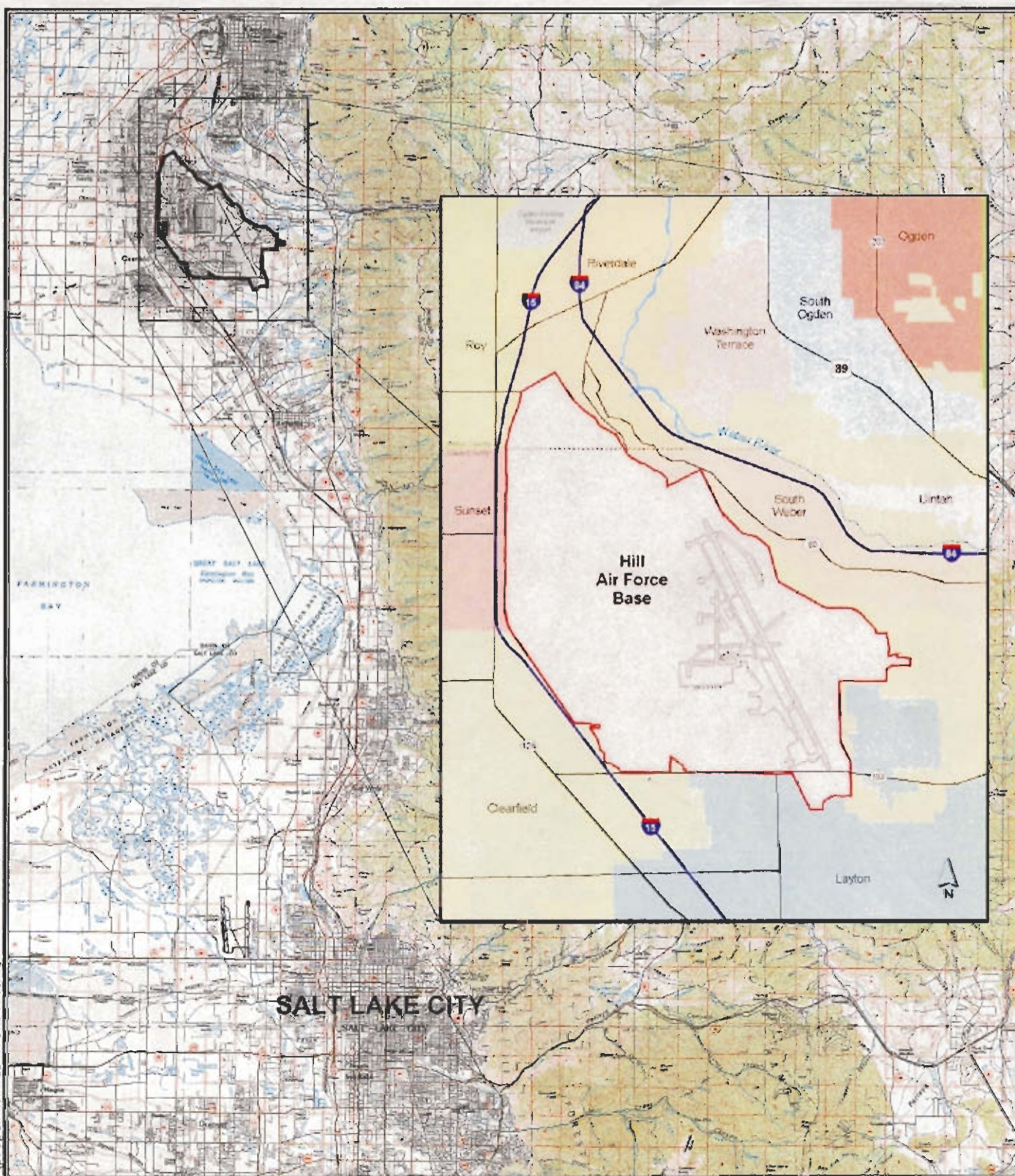
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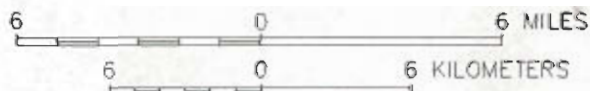
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BASE IMAGES FROM USGS 1x2 DEGREES QUADRANGLES: OGDEN, UT.;  
PROMONTORY, UT.; SALT LAKE CITY, UT.; AND TOOELE, UT.

## HILL AIR FORCE BASE PROPELLANT LAB EA

FIGURE 1  
LOCATION MAP



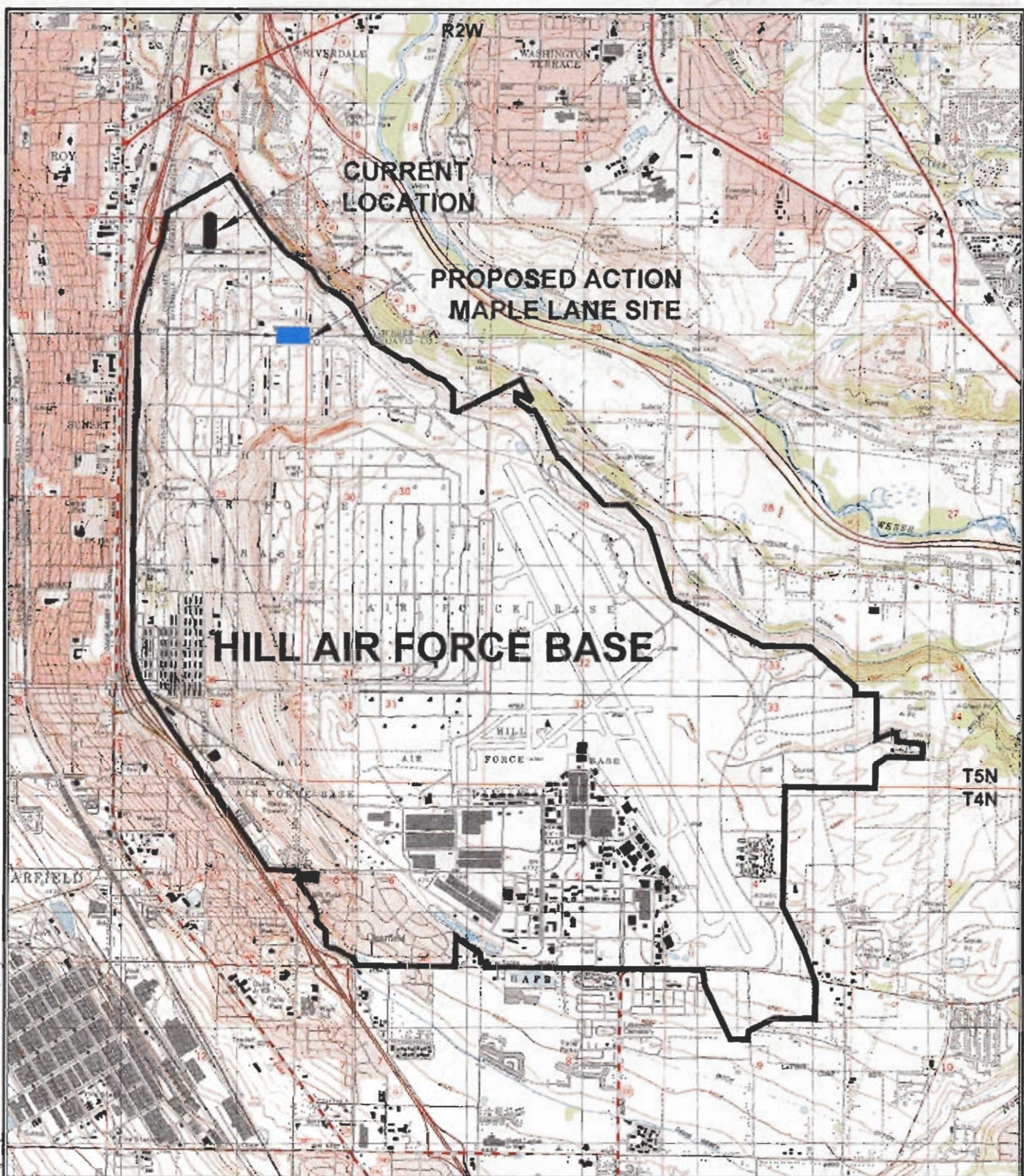
**jbr**  
environmental consultants, inc.

DESIGN BY LM DRAWN BY CP CHD BY SCALE 1:300,000

DATE 4/02/04

REVISION





BASE IMAGES FROM USGS 7.5 MINUTE QUADRANGLES: CLEARFIELD, UT.  
KAYSVILLE, UT.; OGDEN, UT.; AND ROY, UT.

HILL AIR FORCE BASE  
PROPELLANT LAB EA

FIGURE 2  
SITE MAP  
PROPELLANT TESTING & ANALYSIS COMPLEX



environmental consultants, inc.

DESIGN	LM
BY	

DRAWN  
BY

OH	8
----	---

SCALE 1"=4000

DATE 4/02/04  
DRAWN

Notes

CONJUG

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**EXPLANATION**

OPERABLE UNIT 6  
GROUNDWATER PLUME

OPERABLE UNIT 6 SOIL  
CONTAMINATION

EXPLOSIVE CLEAR ZONE

PROPOSED LOCATION

**HILL AIR FORCE BASE  
PROPELLANT LAB EA**

**FIGURE 3  
CURRENT AND PROPOSED LOCATION  
PROPELLANT TESTING & ANALYSIS COMPLEX**

**jbr**  
environmental consultants, inc.

DESIGN: JME DRAWN: CP BY: BT  
DATE: 4/02/04  
SCALE: 1" = 500'



FENCE

ROAD

GATE

MAPLE LANE

ROAD

ROAD

ROAD

GATE

NEW HAMPSHIRE

HILL AIR FORCE BASE  
PROPELLANT LAB EA

FIGURE 4  
PROPOSED MAPLE LANE SITE  
PROPELLANT TESTING & ANALYSIS COMPLEX

**jbr**

environmental consultants, inc.

DATE  
DRAWN 4/02/04

REVISION

SCALE 1" = 100'

DESIGN JM  
DRAWN CP  
CHECK ER

## **Appendix A – Photographs**







## **Appendix B – Air Conformity Analysis**



## **Appendix C - Historic Building Descriptions**

## 1900 AREA BUILDINGS

Ten structures (1932, 1941, 1943, 1944, 1945, 1946, and 1948, 1949, 1950, and 1952) scheduled for demolition in the current project area have been determined eligible for the NRHP and are considered contributing elements to the proposed Ogden Arsenal/Ogden AMA Historic District. During the 1930's, increasing world political tensions made it imperative that the Ogden Arsenal and other such facilities be updated. The facility, which had been laid out to store left-over and obsolete ammunition from World War I, grew dramatically as a result. As World War II approached, not only did the storage facilities multiply more than tenfold, but the Arsenal also went into the business of manufacturing ammunition. The introduction of various types of ammunition manufacture at the installation necessitated the construction of many new buildings which took various forms as related to their function in the overall manufacture (and storage) process. These structures provide a unique picture of the U.S. Army build-up which occurred on the eve of and during World War II, providing particularly vivid images of the processes involved in the manufacture and storage of the munitions necessary to support the Pacific and European theaters of operation. During World War II, the Arsenal made significant contributions to the war effort. In addition bomb and artillery shell loading, it served as an ammunition storage base for the Air Corps and was in charge of distributing all items of ordnance supply and equipment to all areas and stations in the western United States.

Demolition would constitute an Adverse Effect under 36 CFR 800, and therefore requires Hill AFB to enter into a Memorandum of Agreement (MOA) with the SHPO. This agreement identifies measures that would mitigate the adverse effect caused by the destruction of the buildings, and invites the ACHP to be a consulting party to the agreement.

### Building 1932

Building 1932 was built in 1942, has been determined eligible for the NRHP, and is a contributing element to the proposed Ogden Arsenal/Ogden AMA Historic District. It provides particularly vivid insight into the processes involved in the manufacture and storage of munitions. It also contributes an understanding of the U.S. Army build-up which occurred on the eve of and during WWII.

Building 1932 was originally categorized as a smokeless powder magazine and is located in the original North Loading Plant Area. The drawings denoted it a standard service magazine for high explosives, primers, and igniter cartridges. Such buildings (which included 2135 in the West Loading Plant and 2237 in the East Loading Plant) formed part of the melt loading line to load 37mm and other caliber shells. The building in particular was designed to store the smokeless powder which was loaded into the shells. The design came from the Picatinny Arsenal and was modified during construction to suit the Ogden Arsenal's specific site. The design, with its concrete frame and hollow tile infill wall, was supposed to fall outward in the event of an explosion. The earthen "L" shaped berm around the building also served to isolate the building and limit damage which might occur in the event of an explosion. All of the arsenal buildings which stored volatile materials were equipped with a lightning "aerial" that came through the vents and was



connected to shorter aerals along the ridge of the roof. Periodic lightning drills were run during World War II to prepare for operations during stormy weather.

Building 1932 (32'4" x 20'10") is a one-story, gable-roofed building, located in the original North Loading Plant area. It is identical in function and design to building 2237 which is located in the original East Loading Plant area and building 2135 in the original West Loading Plant Area. It is framed with reinforced concrete columns which articulate two bays. The walls are infilled with the hollow red tile characteristic of the "arsenal" style. The original drawings sent from Picatinny Arsenal indicate that the buildings were to be elevated approximately 4'-0" above grade. However, each of these structures sits on grade. This design change may reflect the shock-absorption quality of the sandy soil available at this arsenal as compared to Picatinny, which made in-ground foundations safer. Another building feature inconsistent with the original design is the partial hip roof canopy along the west elevation. This canopy appears to be original to the building (or added very early) and may have served as a sun screen for the west elevation to prevent the ammunition from getting hot in the afternoon sun. It also may have served as protection for workers. Each bay of the building contains a double blast door on the north entry elevation and a nine-pane hopper window on the south. The side elevations were originally designed to have the same windows but were not included during construction. Each of these buildings is flanked on two sides by an "L" shaped berm the height of the building that was probably meant to protect other areas of the plant from potential explosions. The roof of the building is of the typical arsenal 4:12 pitch and is covered with corrugated asbestos, with two round vents integrated among the lightening "aerials" (rods) on the ridge line.

Building surveys and assessments have been performed on Building 1932. Level II HABS/HAER documentation (HAER No. UT-84-AT) and a Utah State Historic Site Form was completed for Building 1932. According to a draft MOA, building 2135, identical in function and design, is being preserved to mitigate the adverse effect caused by the demolition of 1932.

### **Buildings 1941 and 1943**

Buildings 1941 and 1943, identical in function and design, were built in 1941. Both have been determined eligible for the NRHP and are contributing elements to the proposed Ogden Arsenal/Ogden AMA Historic District. They provide particularly vivid insight into the processes involved in the manufacture and storage of munitions. They also contribute an understanding of the U.S. Army build-up which occurred on the eve of and during WWII.

Buildings 1941 and 1943 were originally categorized as pelleting buildings. They are located in the original North Loading Plant Area, and are identical in function and design to buildings 2141, 2142, 2241, and 2242. The drawings denoted them standard pelleting magazine or standard pelleting buildings. This type of building was designed by the Picatinny Arsenal and was adapted by the Ogden Arsenal, built in various lengths to accommodate the different pelleting functions and equipment. This group of buildings contained the pelleting facilities for loading 37mm anti-tank ammunition.

Buildings 1941 and 1943 are one-story, gable-roofed buildings. The 12 small paired rooms housed the pellet press rooms which contained one of three different types of presses (known as types "R," "E," and "F"). These presses were used for specific ammunition loading, such as

37mm shells, fuzes, igniters, tetryl, booster, and detonators. The buildings are framed with 18 poured reinforced concrete columns. The columns are arranged in groups of three, forming six storage areas accessed on the south side by double blast doors and lighted by fifteen-pane hopper windows. On the north side, 18 concrete fire walls form 18 individual rooms, each accessed by double blast doors. The exterior walls of the building are infilled with the common arsenal hollow red tile, with the plan of the building clearly expressed on the exterior by the extended fire walls and concrete column locations. On the south side, the 18 fire walls form 12 small rooms arranged in 6 pairs; a continuous corridor runs along the north side. Between each pair of small rooms is a corridor to an exterior door. The 12 small paired rooms housed the pellet press rooms which contained one of the three different types of presses (known as types "R," "E," and "F"). The west end of the building contains one of these halls and the east end contains a hall and a toilet facility that extends the width of the building. The roof of the building has a 4:12 pitch and is covered with corrugated asbestos, with lightning "aerials" (rods) along the ridge line. The gable roof overhangs approximately five feet on each side to shelter the loading areas. There is also an eight-pane window on each of the gable end walls.

Building surveys and assessments have been performed on Buildings 1941 and 1043. Level II HABS/HAER documentation (HAER No. UT-84-BH) and a Utah State Historic Site Form were completed for Building 2142, identical in function and design to buildings 1941 and 1943. According to a draft MOA, building 2242, identical in function and design, is being preserved to mitigate the adverse effect caused by the demolition of 1941 and 1943.

#### **Buildings 1944, 1945, 1949, 1950, and 1952**

Buildings 1944, 1945, 1949, 1950, and 1952, identical in function and design, were built in 1942. All have been determined eligible for the NRHP and are contributing elements to the proposed Ogden Arsenal/Ogden AMA Historic District. They provide particularly vivid insight into the processes involved in the manufacture and storage of munitions. They also contribute an understanding of the U.S. Army build-up which occurred on the eve of and during WWII.

Buildings 1944, 1945, 1949, 1950, and 1952 served as Rest Houses for the Primer Loading Plant. They are located in the original North Loading Plant Area, and are identical in function and design to buildings 1602, 1604, 1605, 1608, 1643, 1646, 1914, 1934, 2006, 2123, 2127, 2143, 2145, 2147, 2222, 2223, 2227, 2233, 2236, and 2247. Rest houses such as these were used as transient storage for small amounts of chemicals like black powder. These chemicals were stored in the Rest Houses until they reached the same temperature as the Primer Loading building (usually 48 hours). Any moisture that may have condensed on the packages evaporated during this stage.

Buildings 1944, 1945, 1949, 1950, and 1952 are one-story, gable-roofed buildings with a five-foot overhang above the double door entry. This type of storage shed was prevalent throughout the Arsenal plants. It is made of poured concrete columns infilled with the red hollow tile characteristic of the "Arsenal" style. The roof of this building has a pitch of 4:12 and is surfaced with its original corrugated asbestos. Originally the tile walls were coated with "Keene's Cement" on the interior as a protective measure against explosions, with a four-foot high linoleum wainscot lining the bottom half. Linoleum was also used as a floor surface, covering the 4-inch concrete slab which itself rests on a 4-inch layer of hollow tile laid on a 6-inch cinder bed. The roof of the

building is composed of steel beams on exposed light steel framing. A 12-inch diameter copper ventilator with a damper is centered on the ridge roll. The sidewalk outside of the entry consists of a poured concrete slab reinforced with welded fabric also atop a 6-inch cinder bed.

Building surveys and assessments have been performed on Buildings 1944, 1945, 1949, 1950, and 1952. Level II HABS/HAER documentation (HAER No. UT-84-AW) and a Utah State Historic Site Form were completed for Building 2001, identical in function and design to buildings 1944, 1945, 1949, 1950, and 1952. According to a draft MOA, building 2236, identical in function and design, is being preserved to mitigate the adverse effect caused by the demolition of 1944, 1945, 1949, 1950, and 1952.

### **Building 1946**

Building 1946 was built in 1942, has been determined eligible for the NRHP, and is a contributing element to the proposed Ogden Arsenal/Ogden AMA Historic District. It provides particularly vivid insight into the processes involved in the manufacture and storage of munitions. It also contributes an understanding of the U.S. Army build-up which occurred on the eve of and during WWII.

Building 1946, located in the original North Loading Plant Area, is identical in function and design to buildings 2248 and 2148 located in the original East Loading Plant Area. These buildings were used to prepare chemicals used in the production of 37mm anti-tank ammunition, and the design directly reflects the processes that occurred inside. Tracer and Igniter chemicals that were used in the production of 37mm anti-tank ammunition were prepared in Building 1946. The building is bisected lengthwise down the center, with two separate chemicals traveling through the building from north to south. Phosphorus, the Tracer component, left a smoky and luminous trail behind the 37mm shell as it flew through the air toward its target. Strontium, the Igniter component, ignited spontaneously in air when the force of impact from striking the target dispersed it into fine particles. This caused a secondary fire that supplements the initial impact of the shot. Small amounts of these chemicals were brought to Building 1946 from nearby rest houses.

Phosphorous was confined and processed in the west rooms, while Strontium was prepared in the east rooms. Small amounts of each chemical were stored in the two northernmost rooms, and transferred into adjacent rooms where they were separately weighed, screened, and dried. They were then blended together in the two southernmost rooms of Building 1946. Since this was the most dangerous and erratic step of the process, these two rooms were separated from the rest of the building by an open passage that served as a buffer between the blending operation and the screening, weighing, and drying processes. One large blending machine was used in each of these blending rooms. They were powered by a single industrial electric motor that was placed between the two blending rooms, separated by concrete firewalls to protect the blending operations from possible sparks. Since climate control was a crucial component in this process, one large room in the building was dedicated to air conditioning and ventilation equipment.

Building 1946 (30'4" x 80'4") is a one-story, hip-roofed building. Due to the highly volatile nature of the chemicals involved, this building type is composed of a series of individual rooms



separated by concrete fire walls and the red hollow tile infill characteristic of the Arsenal style. The fire walls extend up through the roof and step down as the roof slopes to the north and south, maintaining a continuous slope as the roof slopes to the east and west. The roof is surfaced with corrugated asbestos which is original to the building. In plan, the north side of the structure has two rooms across the elevation, while on the south side there are two rooms separated by one smaller room. Between these lines of rooms are five others which run along the east and west elevations. Each of the two rooms on the north side contains a double entry door and a nine-pane window with concrete sills and lintels. Each of the three rooms on the south side contains double metal loading doors. And the rooms along the east and west sides contain a variety of fenestration; some rooms have only loading doors, others have double entry doors, and others have double entry doors as well as windows. Like most on the arsenal which were associated with extremely volatile materials, this building has lightning aerals. These aerals, however, do not sit on the ridge line. Rather, they rest on the tops of the fire walls which extend through the roof of the building.

Building surveys and assessments have been performed on Building 1946. Level I HABS/HAER documentation (HAER No. UT-84-AU) and a Utah State Historic Site Form were completed for Building 1946. According to a draft MOA, building 2248, identical in function and design, is being preserved to mitigate the adverse effect caused by the demolition of 1946.

#### **Building 1948**

Building 1948 was built in 1942, has been determined eligible for the NRHP, and is a contributing element to the proposed Ogden Arsenal/Ogden AMA Historic District. It provides particularly vivid insight into the processes involved in the manufacture and storage of munitions. It also contributes an understanding of the U.S. Army build-up which occurred on the eve of and during WWII.

Building 1948 located in the original North Loading Plant Area and is identical in function and design to building 1603 located in the original West Fuze Loading Plant area. These buildings housed the tetryl screening and blending operations for 37mm anti-tank ammunition that was produced at Ogden Arsenal. Because of its very high melting point, tetryl was pressed into pellets rather than melted and cast. Before tetryl could be pressed into pellets, it was screened and blended with graphite in Building 1948.

Building 1948 contained a screening room on the top floor and a blending room on the ground floor. These two levels were accessed by an indoor staircase area that also housed the equipment that powered the blending and screening machinery. An exterior safety chute was available for workers to escape from the second floor quickly in the event of an explosion. In 1955, an elevator shaft was added on the west façade and connected to the building by a covered walkway. It was separated from the main building in order to minimize its impact on the sensitive explosives that were handled inside. Tetryl was transferred from a rest house in 50 lb. boxes to the second floor of Building 1948. Two boxes were brought into the building at a time. Each box was weighed (57 lbs. gross/50 lbs. net per box) before it was opened and processed. The tetryl case was opened with a non-sparking pinch bar, and then scooped out with copper scoops. The tetryl was screened through an aluminum screen into a large rubber bucket, using copper scoops, until 100 lbs. (2 boxes) had been screened. This screened tetryl was then

transferred to the first floor, where it was placed in a blender with graphite (100 lbs. tetryl mixed with 1 lb. Graphite) for 30 minutes. The blended tetryl was drawn from the blender into rubber cups (approx. 1 pt. = 1 lb. per cup) that were then transferred to a rest house in wooden transfer boxes by means of an explosive transfer cart.

Building 1948 (24'4" x 20'4") is a two-story, gable-roofed building. The main structure is framed in concrete, with a concrete wall separating the interior open stair from the screening rooms. The walls, like other "arsenal style" buildings, are infilled with red tile. Originally, the interior finish consisted of a linoleum floor and "Keene's Cement" walls. The north and south elevations of the building each have a nine-pane hopper window on each floor. The roof extends to create a five-foot overhang on the east elevation which contains a balcony across the length of the three-bay facade. The facade has a single door, double door, and window on both floors. The west elevation contains a double door to the balcony which connects to the elevator and two double-hung nine-pane windows on the second floor, with similar fenestration on the first floor of the east side.

Building surveys and assessments have been performed on Building 1948. Level III HABS/HAER documentation (HAER No. UT-84-AV) and a Utah State Historic Site Form were completed for Building 1948. According to a draft MOA, building 1603, identical in function and design, is being preserved to mitigate the adverse effect caused by the demolition of 1948.

If any cultural resources are observed in the area during any phase of construction, action in the immediate vicinity would stop, and the Inadvertent Discovery Procedures would be implemented with direction from the HAFB Cultural Resources Manager, and in accordance with the HAFB Draft Integrated Cultural Resources Management Plan.

If this plan is followed, no significant adverse impacts to cultural resources are expected from the construction activities of the Proposed Action. Under the No Action Alternative, no construction activity would take place. Therefore, there are no expected adverse impacts to cultural resources associated with either the Proposed Action or the No Action Alternative.



# **APPENDIX D - Memorandum of Agreement**

**MEMORANDUM OF AGREEMENT  
BETWEEN  
HILL AIR FORCE BASE  
AND  
THE UTAH STATE HISTORIC PRESERVATION OFFICER  
PURSUANT TO 36 CFR § 800  
REGARDING THE  
DEMOLITION OF 139 HISTORIC BUILDINGS,  
EXPLOSIVES CLEAR ZONE AREA,  
HILL AIR FORCE BASE, UTAH**

**WHEREAS**, Hill Air Force Base (AFB) has determined that the proposed demolition of 139 historic buildings (Appendix A) constitutes an undertaking that will have an adverse effect on properties that are eligible for inclusion in the National Register of Historic Places; and

**WHEREAS**, the Hill AFB has determined that, due to government budget constraints and future plans for Hill AFB-managed properties, two methods of mitigation are required; and

**WHEREAS**, Hill AFB has consulted with the Utah State Historic Preservation Office (SHPO) in accordance with Section 106 of the National Historic Preservation Act, 16 U.S.C. § 470, and its implementing regulations (36 CFR § 800); and

**NOW, THEREFORE**, Hill AFB and the Utah SHPO agree that the undertaking shall be implemented in accordance with the following stipulations to mitigate the adverse effect caused by the undertaking.

**STIPULATIONS**

**I. PRESERVATION:** Nine buildings will be preserved to mitigate the adverse effect caused by demolition. One-hundred twenty-seven buildings, represented by the nine types, will be demolished. Please see Appendix B for a list of these nine buildings.

The nine representative types proposed for preservation will be maintained and stabilized in their current condition. All of these buildings are in secure areas that are not accessible by the public and are, therefore, protected from vandalism. Among the buildings proposed for preservation, the facilities currently in use will be maintained to operational standards and will not be modified in any manner that is not in accordance with the Secretary of the Interior's Standards for Rehabilitation in perpetuity. Therefore, the historic character or architectural integrity of these buildings will not be diminished. Hill AFB Cultural Resources Management Program will monitor the buildings bi-annually to ensure that the preserved buildings are being maintained in the agreed upon manner.

In regards to the buildings proposed for preservation, the structural systems will be protected and maintained by cleaning the roof gutters and downspouts; replacing deteriorated flashing; keeping masonry, wood, and architectural metals in a sound condition; and assuring that structural members are free from insect infestation. Roof sheathing will be checked for proper venting to prevent moisture condensation and water penetration. In addition, proper drainage shall be provided so that water is not allowed to stand on flat, horizontal surfaces or accumulate in decorative features. The wood and architectural metal which comprises the window frames,

sashes, muntins, and entrances shall be protected and maintained through appropriate surface treatments such as cleaning, rust removal, limited paint removal, and re-application of protective coating systems. Weatherization effort shall be made to protect the facility against moisture penetration and deterioration caused by exposure, vandalism, and other factors that could result in any type of deterioration, loss of historic character, or loss of architectural integrity.

**2. PUBLIC OUTREACH:** The adverse effect caused by the demolition of twelve buildings (not included in the nine preserved representative types) will be mitigated by the construction of an exhibit in the Hill Aerospace Museum. This exhibit will consist of a wall-mounted display and free-standing model portraying the history of the Ogden Arsenal. The exhibit will include an account of the associated buildings in the Ogden Arsenal and their specific functions supporting munitions production, storage, and transfer during World War II. The Hill Aerospace Museum will retain custody of the exhibit, and maintenance will be incorporated into the existing preservation process at the Hill Aerospace Museum.

**3. PHOTOGRAPHS/DRAWINGS:** Photographs are required of representative types of the buildings cited for demolition in Appendix A. It will be confirmed that an adequate number of professional quality black and white negative photographs, in archival stable protective storage pages, along with associated as-built drawings, architectural elevations, and Historic American Engineering Record (HAER) documentation have been submitted to the Utah SHPO. It will be ensured that photographs are numbered and labeled with the address and the date that the photograph was taken, and that these photographs are keyed to a floor plan and site map. It shall be noted that if additional documentation is necessary, the photographs, as-built drawings, and architectural elevations will first be screened by Hill AFB Security personnel, and any particular information will not be publicly released if doing so would create an unreasonable security risk or violates any valid Federal security law or regulation. It is anticipated that no restrictions will be imposed if additional documentation is needed.

Additionally, an adequate number of high quality digital photographs and their associated as-built drawings, architectural elevations, and HAER documentation detailing all areas to be impacted by the undertaking shall be posted to the Hill AFB Cultural Resources Public Outreach Web Site (Web Site). Photographs, as-built drawings, architectural elevations, and HAER documentation shall be inserted into a slide show situated on a map of Hill AFB to show context. Photographs, as-built drawings, architectural elevations, and HAER documentation proposed for inclusion in the Web Site will first be screened by Hill AFB Security personnel and any particular information will not be publicly released if doing so would create an unreasonable security risk or violates any valid Federal security law or regulation. Classified or national security sensitive information, if any, regarding building design or function shall not be posted in violation of Federal law. Any information posted to the Web Site is subject to future removal if valid Federal security laws or regulations change in the future and such law or regulation prohibits such posting. It is anticipated that no restrictions will be imposed if additional documentation is needed.

**4. INTENSIVE LEVEL SURVEY (ILS) FORM:** It will be confirmed that an ILS form has been completed according to basic survey standards for a representative type of each building and submitted to the Utah SHPO.

Additionally, portions of the Utah State Historic Site form shall be posted with the corresponding photographs, as-built drawings, architectural elevations, or HAER documentation on the Web

Site. While the entire site form will not be posted, the most relevant portions of the site form, Parts 4 and 5, Architectural Description and History, will be posted together with photographs as-built drawings, architectural elevations, or HAER documentation subject to the security restrictions cited above in Section 3.

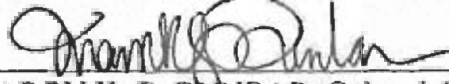
5. **DISPUTE RESOLUTION:** Should the Utah SHPO or Hill AFB object within thirty (30) days to any actions proposed pursuant to this MOA, Hill AFB shall consult with the Utah SHPO to resolve the objection. If Hill AFB determines that the objection cannot be resolved, Hill AFB shall request the comments of the Advisory Council on Historic Preservation (Council) pursuant to 36 CFR § 800.7. Any Council comment provided in response to such a request will be taken into account by Hill AFB in accordance with 36 CFR § 800.7(c)(4) with reference only to the subject of the dispute; Hill AFB's responsibility to carry out all actions under this MOA that are not the subject of this dispute will remain unchanged.

6. **EFFECTIVE DATE and DURATION:** This MOA shall become effective upon execution by both parties. If, after three (3) years, any of the stipulations of this MOA have not been fulfilled, Hill AFB will notify the Utah SHPO and determine whether the MOA needs to be revised.


This MOA supplements the previous MOA, effective in September 2003, regarding the demolition of seven historic buildings in the ECZ area of Hill AFB. These seven historic buildings fit into the compatible representative building types proposed for preservation in Section 1 for the adverse effect caused by the demolition of 127 buildings in the ECZ area at Hill AFB.

Execution of this MOA by Hill AFB and the SHPO, and implementation of its terms, evidence that Hill AFB has taken into account the effects of the proposed demolitions on historic properties and mitigated the adverse effect.

**DEPARTMENT OF THE AIR FORCE**

By:  Date: 20 Feb 05  
SHARON K. G. DUNBAR, Colonel, USAF  
Commander, 75th Air Base Wing

**UTAH STATE HISTORIC PRESERVATION OFFICER**

By:  Date: 3/29/05  
Utah State Historic Preservation Officer

## APPENDIX A - BUILDINGS PROPOSED FOR DEMOLITION

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
797	Full trapezoidal with Miter Arch Doorway	1939	Yes	No
1315	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1316	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1331	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1332	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1333	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1334	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1335	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1336	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1337	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1338	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1339	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1341	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1342	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1343	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1344	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1345	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1346	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1347	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1348	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes



1349	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1350	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1351	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1352	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1353	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1354	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1357	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1358	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1359	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1362	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1363	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1364	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1365	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1431	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1432	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1434	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1435	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1436	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1440	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1441	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1442	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes



1443	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1444	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1446	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1447	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1448	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1449	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1450	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1451	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1452	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1453	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1454	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1455	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1456	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1460	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1461	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1462	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes
1489	Full trapezoidal with Miter Arch Doorway	1939	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1395	Full Trapezoidal with regular doorway	1939	Yes	No
1396	Full Trapezoidal with regular doorway	1939	Yes	No

1397	Full Trapezoidal with regular doorway	1939	Yes	No
1398	Full Trapezoidal with regular doorway	1939	Yes	No
1399	Full Trapezoidal with regular doorway	1939	Yes	No
1495	Full Trapezoidal with regular doorway	1939	Yes	No
1496	Full Trapezoidal with regular doorway	1939	Yes	No
1497	Full Trapezoidal with regular doorway	1939	Yes	No
1498	Full Trapezoidal with regular doorway	1939	Yes	No
1499	Full Trapezoidal with regular doorway	1939	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1601	Plain Arsenal, 1 floor, Gable roof, 18 column	1942	Yes	No
1941	Plain Arsenal, 1 floor, Gable roof, 18 column	1942	Yes	No
1943	Plain Arsenal, 1 floor, Gable roof, 18 column	1942	Yes	No
2141	Plain Arsenal, 1 floor, Gable roof, 18 column	1941	Yes	No
2142	Plain Arsenal, 1 floor, Gable roof, 18 column	1941	Yes	No
2241	Plain Arsenal, 1 floor, Gable roof, 18 column	1941	Yes	No
2242	Plain Arsenal, 1 floor, Gable roof, 18 column	1941	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1946	Arsenal style, 1 floor, hip roof	1942	Yes	No
2248	Arsenal style, 1 floor, hip roof	1941	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1602	Arsenal Style, 1 floor, Gable roof	1942	Yes	No
1604	Arsenal Style, 1 floor, Gable roof	1942	Yes	No
1605	Arsenal Style, 1 floor, Gable roof	1942	Yes	No
1608	Arsenal Style, 1 floor, Gable roof	1942	Yes	No
1643	Arsenal Style, 1 floor, Gable roof	1941	Yes	No
1646	Arsenal Style, 1 floor, Gable roof	1941	Yes	No
1914	Arsenal Style, 1 floor, Gable roof	1942	Yes	No
1944	Arsenal Style, 1 floor, Gable roof	1942	Yes	No
1945	Arsenal Style, 1 floor, Gable roof	1942	Yes	No
1949	Arsenal Style, 1 floor, Gable roof	1942	Yes	No
1950	Arsenal Style, 1 floor, Gable roof	1942	Yes	No
1952	Arsenal Style, 1 floor, Gable roof	1942	Yes	No
2006	Arsenal Style, 1 floor, Gable roof	1942	Yes	No
2223	Arsenal Style, 1 floor, Gable roof	1941	Yes	No
2227	Arsenal Style, 1 floor, Gable roof	1941	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1370	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1371	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1372	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No

1373	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1381	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1382	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1383	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1384	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1385	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1386	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1387	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1388	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1389	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1391	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1392	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1393	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1470	Truncated, trapezoidal, with Miter Arch doorway	1939	Yes	No
1472	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1473	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1474	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No

1475	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1480	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1481	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1482	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1483	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1484	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1485	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1486	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1487	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1488	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1491	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1492	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1493	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No
1494	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1374	Arsenal style, 1 floor, gable roof, overhead loading doors/fenestration	1921	Yes	No

1375	Arsenal style, 1 floor, gable roof, overhead loading doors/fenestration	1921	Yes	No
1471	Arsenal style, 1 floor, gable roof, overhead loading doors/fenestration	1921	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1323	Storage Pad/Shed	1945	Yes	No
1380	Storage Pad/Shed	1945	Yes	No
1469	Storage Pad/Shed	1945	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1607	Arsenal style, 16 bays, 1.5 stories, and projected columns.	1942	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1609	50' x 20' concrete hollow tile structure, three uneven bays, corrugated asbestos roofing.	1942	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1915	Arsenal style, 2 story central section, 1.5 stories on both sides of central section, 13 bays, and concrete loading dock.	1942	Yes	Yes
2214	Arsenal style, 2 story central section, 1.5 stories on both sides of central section, 13 bays, and concrete loading dock.	1941	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1603	Plain Arsenal Style, 2 floors, Gable roof.	1942	Yes	No
1948	Plain Arsenal Style, 2 floors, Gable roof.	1942	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1932	Arsenal Style, 1 floor, Gable roof, partial hip roof, 2 bays.	1942	Yes	No

## APPENDIX B – BUILDINGS PROPOSED FOR PRESERVATION

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1317	Full trapezoidal with Miter Arch Doorway	1939	Yes	Yes

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1318	Full Trapezoidal with regular doorway	1939	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
2236	Arsenal Style, 1 floor, Gable roof	1941	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
2135	Arsenal Style, 1 floor, Gable roof, partial hip roof, 2 bays	1941	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1394	Truncated, trapezoidal, with Miter Arch doorway	1938	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1376	Arsenal style, 1 floor, gable roof, overhead loading doors/fenestration	1921	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1415	Storage Pad/Shed	1945	Yes	No



Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
1642	Arsenal style, 16 bays, 1.5 stories, and projected columns.	1941	Yes	No

Bldg. Number	Type	Year Built	World War II Eligible	Cold War Eligible
2114	Arsenal style, 2 story central section, 1.5 stories on both sides of central section, 13 bays, and concrete loading dock.	1941	Yes	Yes